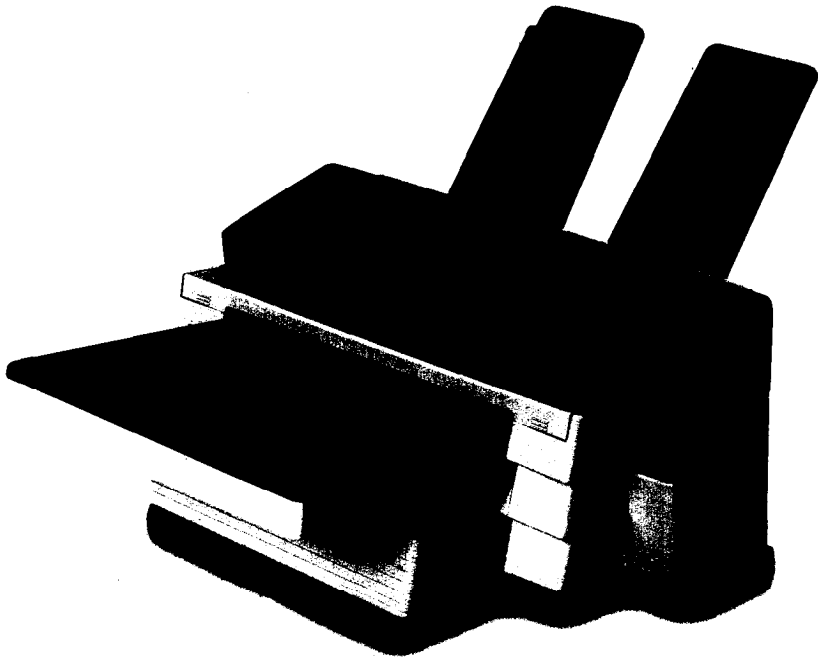


# User's Manual



**EPI-4000**

**EPSON®**

4000119  
C01-00

**EPSON®**

EPI-4000

User's Manual

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## FCC COMPLIANCE STATEMENT FOR AMERICAN USERS

This equipment has been tested and found to comply with the limits for a class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on. The user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna
- Increase the separation between the equipment and receiver
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected
- Consult the dealer or an experienced radio/TV technician for help.

### WARNING

The connection of a non-shielded printer interface cable to this printer will invalidate the FCC Certification of this device and may cause interference levels which exceed the limits established by the FCC for this equipment. If this equipment has more than one interface connector, do not leave cables connected to unused interfaces.

### FOR CANADIAN USERS

This digital apparatus does not exceed the Class B limits for radio noise emissions from digital apparatus as set out in the radio interference regulations of the Canadian Department of Communications.

Le présent appareil numérique n'émet pas de bruits radioélectriques dépassant les limites applicables aux appareils numériques de Classe B prescrites dans le règlement sur le brouillage radioélectriques édicté par le Ministère des Communications du Canada.

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## **IMPORTANT SAFETY INSTRUCTIONS**

1. Read all of these instructions and save them for later reference.
2. Follow all warnings and instructions marked on the product.
3. Unplug this product from the wall outlet before cleaning. Do not use liquid cleaners or aerosol cleaners. Use a damp cloth for cleaning the outside of the unit.
4. Do not use this product near water.
5. Do not place this product on an unstable cart, stand, or table. The product may fall, causing serious damage to the product.
6. Slots and openings in the cabinet and the back or bottom are provided for ventilation; to ensure reliable operation of the product and to protect it from overheating, these openings must not be blocked or covered. The openings should never be blocked by placing the product on a bed, sofa, rug, or other similar surface. This product should never be placed near or over a radiator or heat register. This product should not be placed in a built-in installation unless proper ventilation is provided.
7. This product should be operated from the type of power source indicated on the marking label. If you are not sure of the type of power available, consult your dealer or local power company.
8. This product is equipped with a 3-wire grounding-type plug, a plug having a third (grounding) pin. This plug will only fit into a grounding-type power outlet. This is a safety feature. If you are unable to insert the plug into the outlet, contact your electrician to replace your obsolete outlet. Do not defeat the purpose of the grounding-type plug.
9. Do not locate this product where the cord will be walked on.

10. If an extension cord is used with this product, make sure that the total of the ampere ratings on the products plugged into the extension cord do not exceed the extension cord ampere rating. Also, make sure that the total of all products plugged into the wall outlet does not exceed 15 amperes.
11. Never push objects of any kind into this product through cabinet slots, as they may touch dangerous voltage points or short out parts that could result in a risk of fire or electric shock. Never spill liquid of any kind on the product.
12. Except as specifically explained in the User's Manual, do not attempt to service this product yourself. Opening or removing those covers that are marked "Do Not Remove" may expose you to dangerous voltage points or other risks. Refer all servicing in those compartments to service personnel.
13. Unplug this product from the wall outlet and refer servicing to qualified service personnel under the following conditions:
  - A. When the power cord or plug is damaged or frayed.
  - B. If liquid has been spilled into the product.
  - C. If the product **has** been exposed to rain or water.
  - D. If the product does not operate normally when the operating instructions are followed. Adjust only those controls that are covered by the operating instructions, since improper adjustment of other controls may result in damage and will often require extensive work by a qualified technician to restore the product to normal operation.
  - E. If **the** product has been dropped or the cabinet has been damaged.
  - F. If **the** product exhibits a distinct change in performance, indicating a **need** for service.

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# Introduction

The Epson® EPI-4000 combines high performance and reliability with a wide range of features. The EPI-4000 uses ink jet technology for fast, quiet, high-quality printing. A powerful processor drives the EPI-4000's imaging system, allowing it to compose an entire page in internal memory before printing.

## Features

In addition to the high-quality printing and ease of operation you'd expect from an Epson printer, these features make using the EPI-4000 a snap:

- Flexible paper handling so you can choose from 13 popular paper sizes, including 11 x 17-inch ledger size.
- 300 dpi for crisp, clear printing
- A convenient control panel for control over almost every printer feature, from font selection to interface configuration.
- Access to the wide selection of exclusive Epson fonts.
- Two card slots for adding optional font cards.
- HP LaserJet series II™ emulation gives you easy access to the great variety of software written for Hewlett Packard® printers.
- Two Epson ESC/P® emulation modes for compatibility with the many software applications written for Epson 9-pin and 24-pin printers.
- A large selection of international symbol sets to print with the letters, characters, and symbols of various languages.
- 0.5 megabytes (MB) of MM built-in, expandable to 2.5 MB for graphics printing.

## Introduction

- The ability to print up to two letter size pages or one ledger size page of text per minute.
- Two built-in interfaces: Centronics® parallel and RS-232C.

## Options and Supplies

Many options are available to enhance your EN-4000 printer. For detailed information on the installation and use of these options, see Chapter 4.

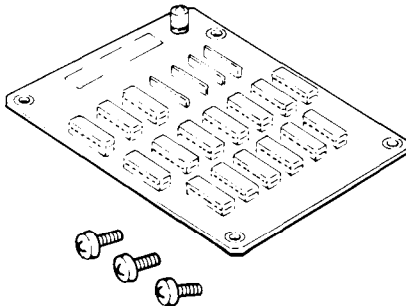
### Font cards

Optional font cards are available from your Epson dealer. These cards contain additional fonts to supplement the internal fonts resident in your printer.



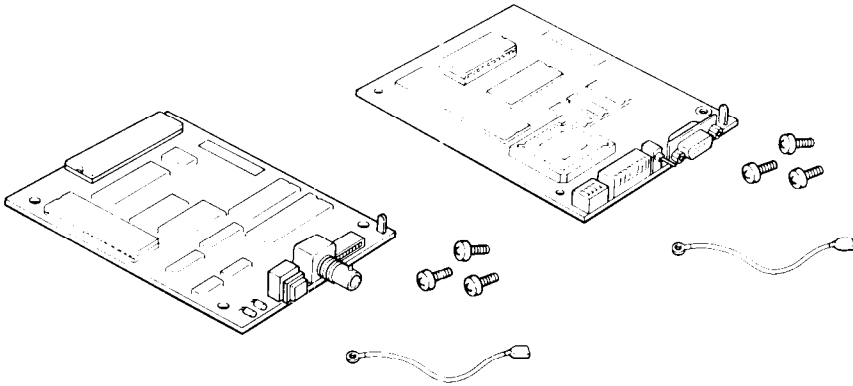
### Memory expansion board

Increase your printer memory from 0.5 MB of RAM to a total of 2.5 MB with a memory expansion board. More memory means faster printing for complex pages.



### **Coax and Twinax interface boards**

These two interfaces let you use the EPI-4000 as a local system printer for an IBM® mainframe or minicomputer. You can install the boards quickly and easily inside the printer without any additional hardware.



### **IEEE interface board**

The IEEE-488 interface offers standardized connections, trouble-free operation, and the ability to connect computers, printers, and other devices on the same line to share data freely.

### **Serial interface boards**

These interfaces are required if you need an interface that conforms to the Current Loop standard instead of RS-232C. These interfaces also provide a combination of these features: X-on/X-off data communications protocol and loopback self test modes.

## **About This Manual**

This user's manual provides fully illustrated, step-by-step instructions on setting up and operating your Epson EN-4000 printer.

### **Finding your way around**

- Chapter 1 contains information on unpacking, setting up, testing, and connecting the printer. Be sure to read and follow these instructions first.
- Chapters 2 and 3 cover general printer operation and paper handling. This important information is necessary for the day-to-day operation of your printer.
- Chapter 4 shows you how to get the most from your printer using font cards, extended memory, and the optional interface boards.
- If the printer does not operate properly or the printed results are not what you expect, see Chapter 6 for troubleshooting tips.
- Other chapters contain information on printer maintenance and specifications. The appendixes contain explanations of printer modes as well as a summary of printer commands, tables of available symbol sets, and character samples. You will also find an index and a glossary of printer terms.
- At the back of this manual is a handy Quick Reference card showing all SelecType menus and options for easy use whenever you use SelecType.

## Conventions used in this manual



**WARNINGS** must be followed carefully to avoid damage



**CAUTIONS** should be followed carefully to ensure that your printer operates correctly.

Notes contain important information and useful tips on the

## Where to Get Help

Customer support and service for Epson products are provided by a network of authorized Epson dealers and Customer Care Centers throughout the United States. Epson America provides product information and support to its dealers and Customer Care Centers.

Therefore, we ask that you contact the business where you purchased your Epson product to request assistance. If the people there do not have the answer to your question, they can obtain it through our dealer support program.

Epson is confident that this policy will provide you with the assistance you need.

Call the Epson Consumer Information Center at 1-800-922-8911 for the following:

- The location of your nearest Epson dealer
- The location of your nearest Customer Care Center
- Information on Epson User Groups.

To locate or purchase accessories or supplies, contact your nearest Epson dealer or call 1-800-873-7766.

## **Ink Jet Printer Precautions**

The EPI-4000 uses ink jet technology. Even if you are familiar with other types of printers, please read and observe the following precautions to ensure safe, efficient operation.

- Never put your hand inside the printer while it is printing.
- Cartridge ink contains propyl alcohol. If the ink comes in contact with your skin, wash immediately with soap and water. If ink gets in your eyes, flush them immediately with plenty of water.
- If ink accidentally gets on any part of the printing mechanism, wipe it off with a clean, damp cloth.
- Store ink cartridges in a cool, dry place out of direct sunlight. Do not store cartridges at excessively high or below freezing temperatures.
- Keep ink cartridges out of the reach of children.
- Do not use an ink cartridge after the labeled expiration date. Ink cartridges cannot be refilled; do not take them apart.
- Never remove an ink cartridge while the printer is on line or while it is printing.
- Always follow these steps to turn off the printer: Press ON LINE to set the printer off line. Wait three seconds; then turn the printer power switch off. You must wait three seconds after you press ON LINE to ensure that the print head is safely capped at the left side of the printer.
- If you want to transport the printer, make sure the print head is safely capped, as described above. Remove the ink cartridge before you move the printer to a new location.
- Never turn the printer on or off unless an ink cartridge is installed.
- Do not turn off the printer while it is printing. The print head may not cap properly, resulting in faster ink consumption.



- If you must turn the printer off in the midst of printing, first press **ON LINE** to set the printer off line, wait three seconds, and then turn **the** power off.
- The EPI-4000 uses an electric heater to dry the ink as the page is released to the output tray. For best print quality, do not touch the finished page until the printer completes delivery to the output tray.
- The paper output slot at the back of the printer may become warm during printing. This is because of **the** electric heater used to dry the ink and is no cause for concern.
- When you turn **on the** printer after a long period of disuse, you may notice a peculiar smell. This is normal; there is no cause for concern.

## Chapter 1

# Setting Up the Printer

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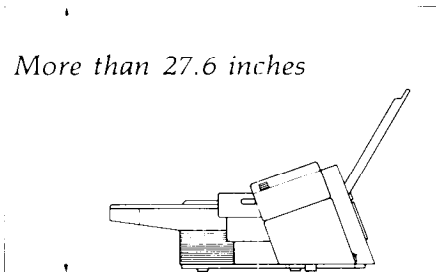
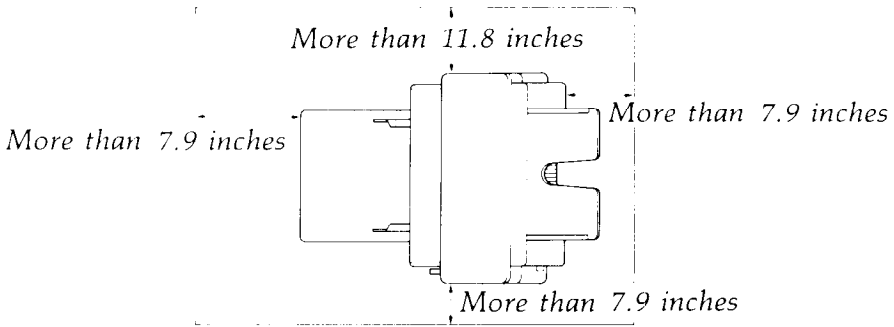
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## Choosing a Place for the Printer

There are several important things to consider when selecting a place to set up your printer. Keep the following in mind:

- Leave enough room around the printer to allow easy operation and maintenance and unrestricted flow of air. The illustrations below show how much space is required.



- Place the printer on a flat, hard, stable surface. A soft surface, such as a carpeted area, blocks the ventilation slots and may cause overheating.
- Place the printer close enough to the computer for the printer cable to reach.
- Use a grounded outlet with three holes to match the plug on the printer. Do not use an adapter plug.



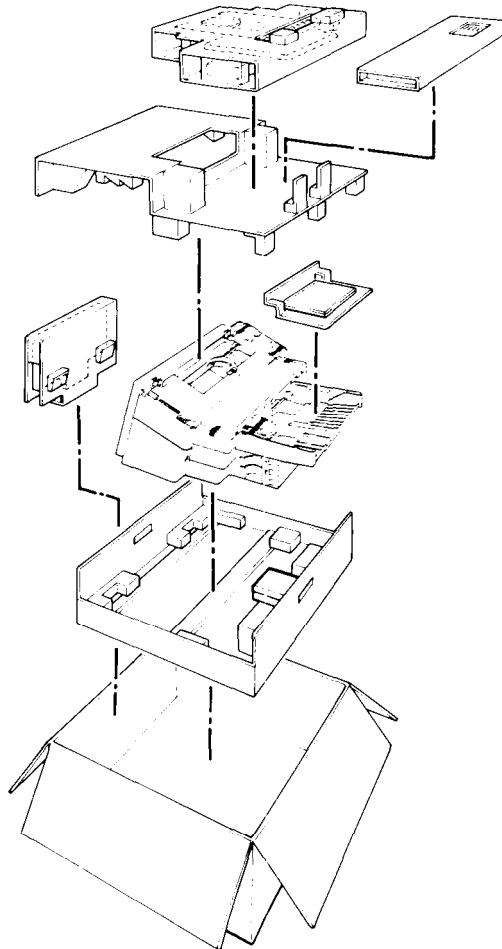
**WARNING:**

- Avoid locations that are subject to direct sunlight, excessive heat, moisture, or dust.
- Avoid electrical outlets controlled by wall switches or automatic timers. Power interruptions can wipe out information in your computer memory and in your printer memory.
- Avoid using outlets that share a circuit with large motors or other appliances that might disturb the power supply.
- Keep the entire computer system away from potential sources of electromagnetic interference such as loudspeakers or the base units of cordless telephones.

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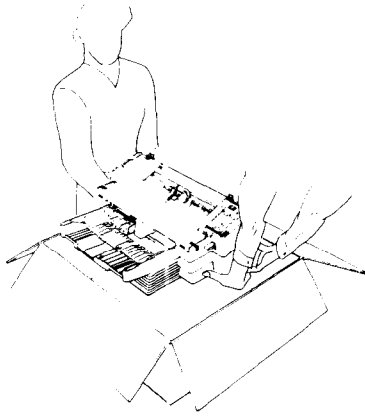
## Unpacking the Printer

Carefully unpack the main carton. At the top of the carton you'll find an accessory box containing several printer components. Under this box is the printer itself, protected by white packing material. The illustration below shows how your printer is packaged.

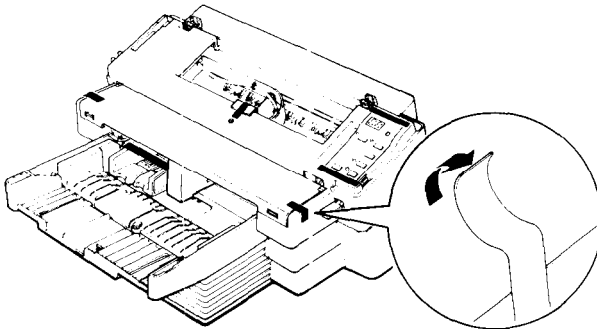


## *Unpacking the Printer*

1. Remove the printer from the large carton and set it on a flat, stable surface. You may need someone to help you lift it.



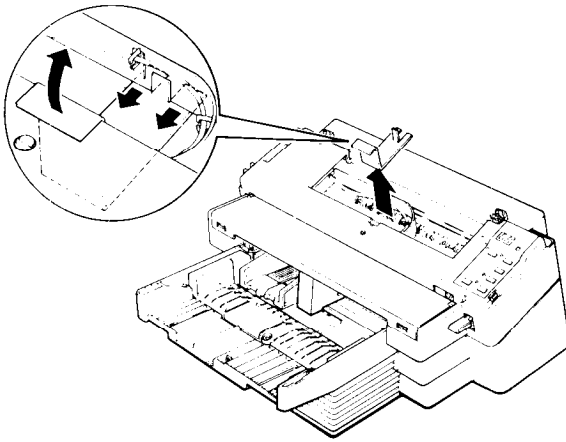
2. Remove the printer from the plastic bag. Then remove each shock prevention tape as shown below.



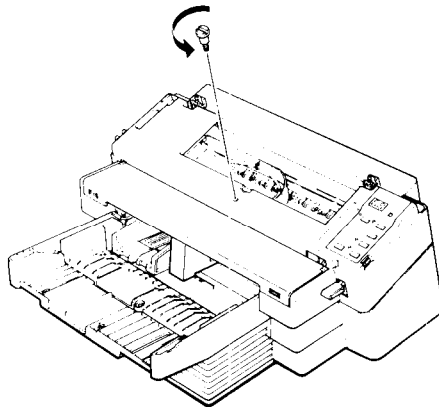
## **Removing the Protective Materials**

The EN-4000 is protected during shipping by a screw, a locking bracket, a protective sheet, and white foam packing materials. Except for the white packing material inside the paper tray, you must remove these items before you can turn on your printer. Save all protective materials in case you need to transport your printer.

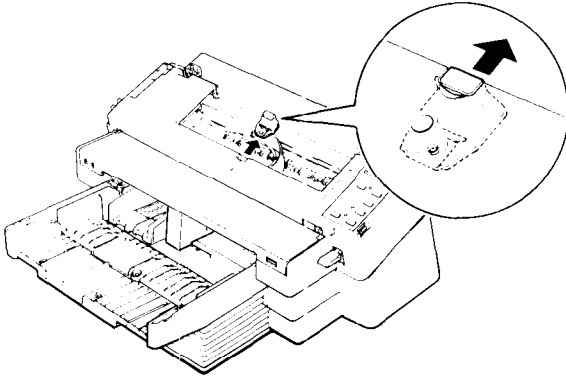
1. Remove the protective material from the print head's flexible band.



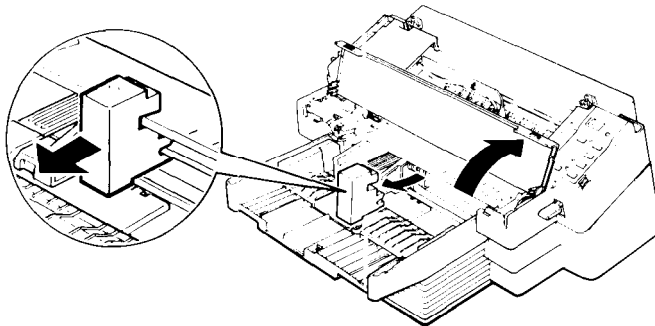
2. Use a coin to remove the screw, as shown below.



3. Remove the locking bracket.



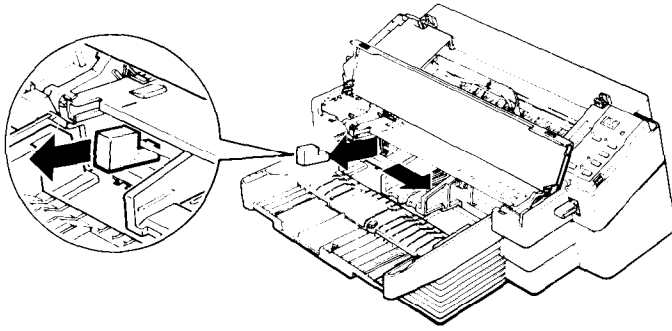
4. Lift the paper feeder cover and remove the white packing material from the center of the paper tray, as shown below.



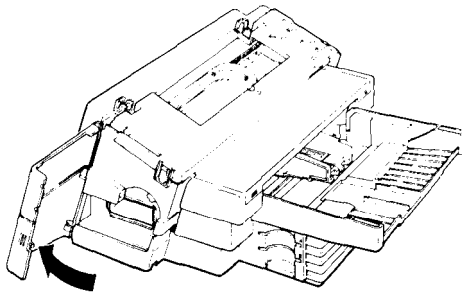


## *Unpacking the Printer*

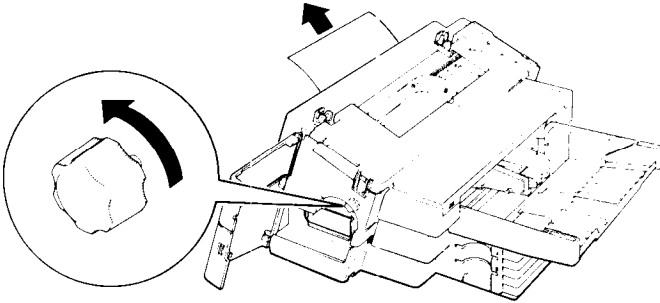
5. Move both paper guides to the right; then remove the packing material as shown below.



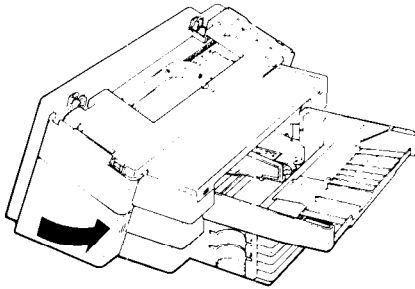
6. Open the ink cartridge compartment cover.



7. Turn the knob counter-clockwise until the printer ejects the protective sheet through the back of the printer.

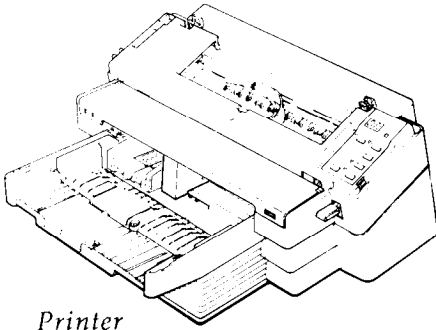


8. Close the ink cartridge compartment cover and the paper feeder cover.



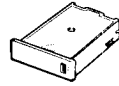
## **Checking the Parts**

As you unpack your printer, check that you have all the parts shown below, and that none have been damaged during transportation.

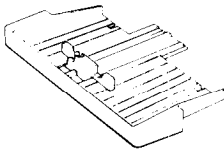
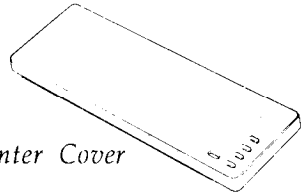


*Printer*

*Ink cartridge*



*Printer Cover*

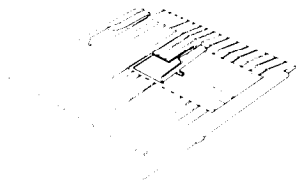


*Extension tray*

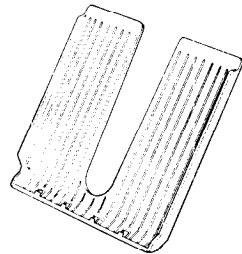
*Paper support*



*Screw locks*



*Paper tray cover*



*Output tray*

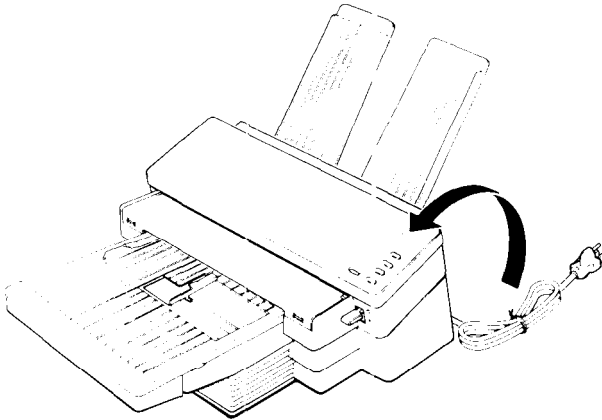
**Note:** A cleaning brush is also included with your printer.

After removing the parts, save all the packaging materials in case you need to transport your printer.

## **Carrying the Printer**

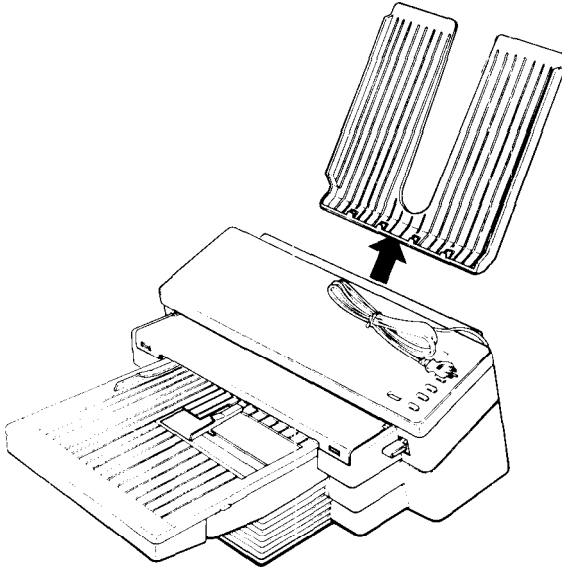
EPI-4000 printer design differs from that of other printers. When you need to carry the printer, follow these precautions to avoid damage:

1. Wind the printer cord in a coil, secure the coil, and place it on top of the printer as shown below.

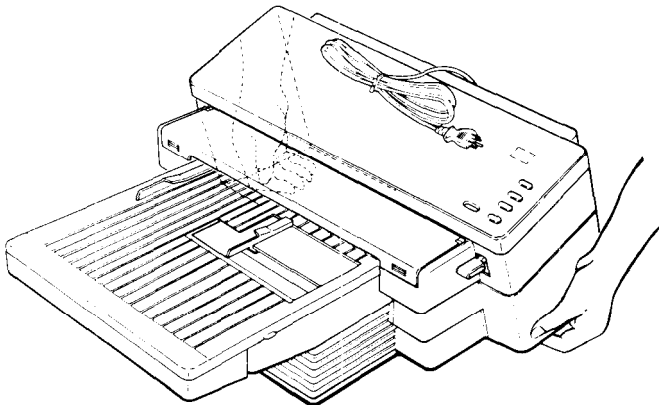


## *Unpacking the Printer*

2. Remove the output tray.

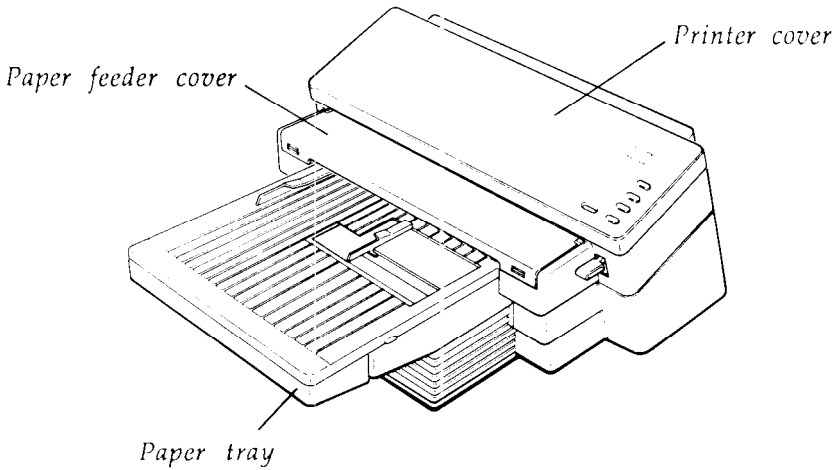


3. Grasp the printer as shown below. You may need someone to help you lift it.





**CAUTION:** Never pick up the printer by grasping the parts indicated in the illustration below. Because they're not designed to bear the weight of the printer, you may damage them or your printer.

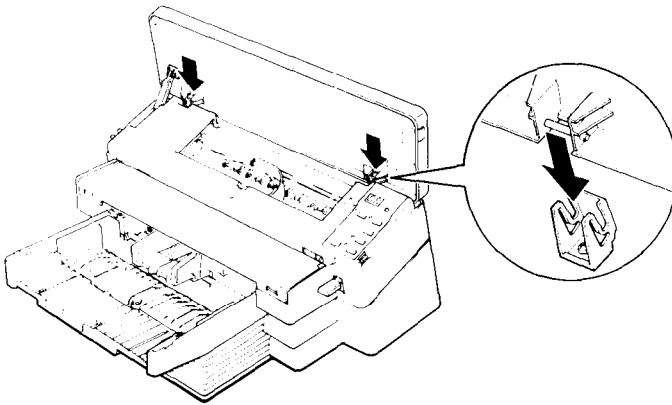


## Assembling the Printer

The next step is to install a few important parts.

### Attaching the Printer Cover

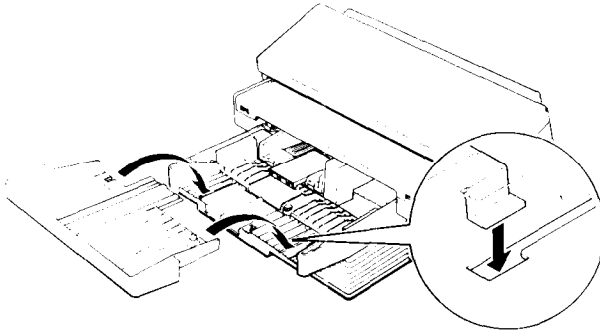
1. Insert the mounting pins on the printer cover into the mounting brackets at the top of the printer. Press firmly until the cover clicks into place.



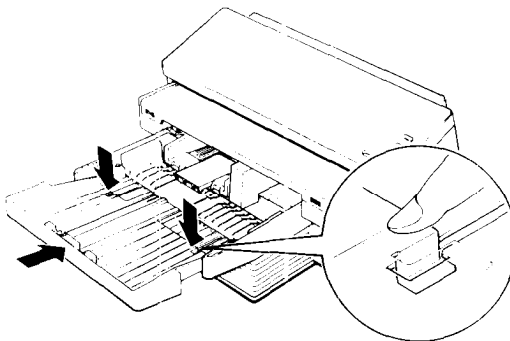
## **Installing the Extension Tray**

You can pull out the extension tray as needed to hold paper that is longer than the paper tray.

1. Hold the extension tray in your right hand and align the two tabs at the bottom over the slots in the paper tray, as shown below.



2. Place your left hand on the extension tray and push down lightly with both hands while sliding the tray forward.

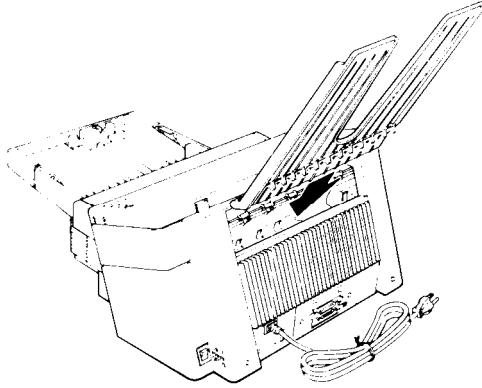




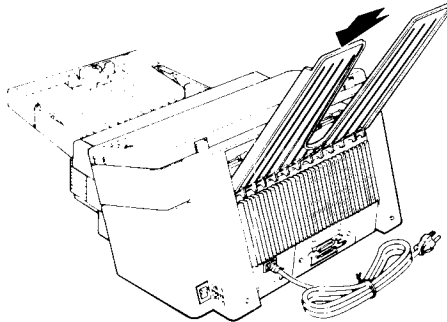
## **Installing the Output Tray**

The output tray receives printed pages and envelopes.

1. Hold the output tray as shown below.

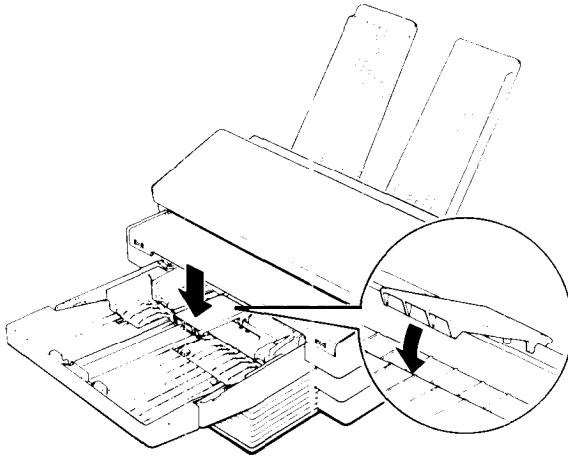


2. Insert the tray firmly into place.



## Installing the Paper Support

1. Place the paper support on the metal ledge between the two paper guides, and lower the end of the support into place as shown below.



## Installing the Ink Cartridge

The printer's ink cartridge is completely self contained, so it's easy to install and remove. Replacement ink cartridges (S020003) are available from your Epson dealer.

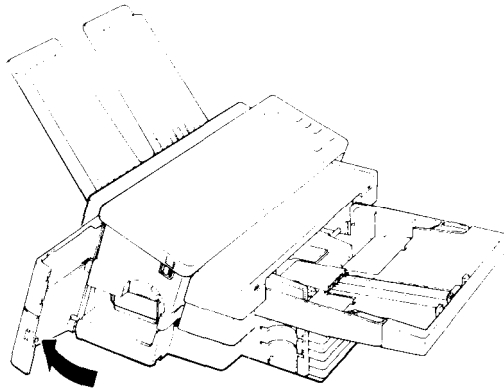


**WARNING:** Cartridge ink may cause irritation to your skin or eyes. If ink gets in your eyes, flush them with water. When you handle an ink cartridge, wash any traces of ink from your skin with soap and water. Keep cartridges out of the reach of children. Do not take ink cartridges apart.

## Assembling the Printer

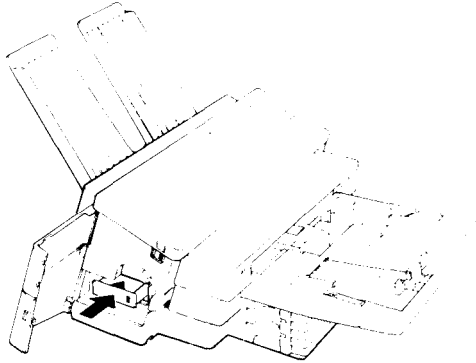
Follow the steps below to install the ink cartridge:

1. Open the ink cartridge compartment cover, as shown.

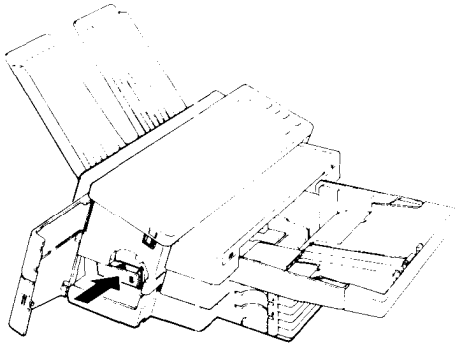


**WARNING:** Never install or remove an ink cartridge when the printer is on line. Always set the printer off line (press ON LINE to turn the indicator light off) and make sure the print head is capped at the left side of the printer before removing or replacing the ink cartridge.

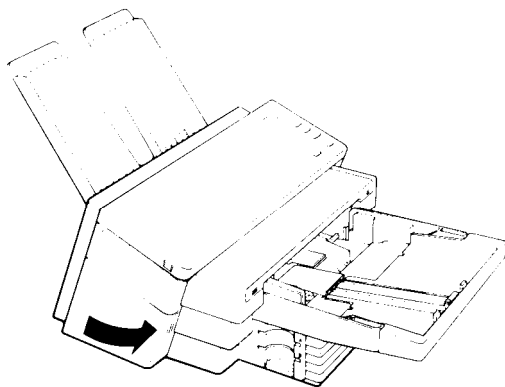
2. Hold the cartridge with your thumb over the raised triangle at one end. Insert the end opposite the triangle into the ink compartment, as shown below. The ink level indicator should be in the lower right corner.



3. Push the cartridge gently into the compartment until you feel it contact the back of the compartment and you hear it snap into place.



4. Close the ink compartment cover.



Note: Each ink cartridge contains enough ink to print up to 1000 average letter size pages. Pages with graphics or dense text use more ink. The first ink cartridge you install may print fewer pages because some of the ink is used to fill the ink feeding system.

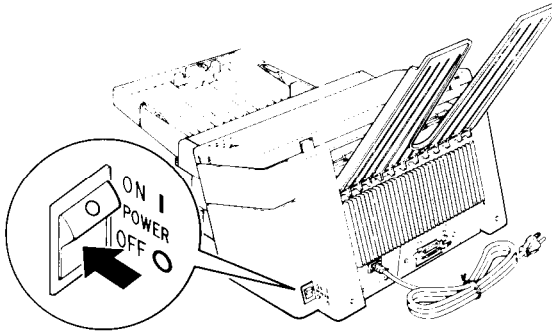
### **When to replace a cartridge**

The indicator lever at the end of each cartridge shows you when it's time to replace the cartridge. The lever moves from F (full) to E (empty) as the ink is used. See Chapter 5 for more information on replacing an ink cartridge.

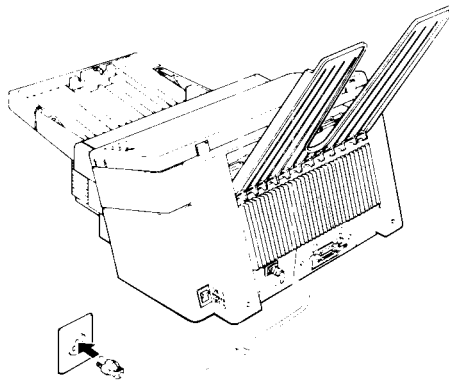
## **Plugging in the Printer**

Now that your printer is fully assembled, follow the steps below to connect it to an electrical outlet.

1. Make sure the power switch, located at the right rear of the printer, is turned off. (It is off when the O is visible, as shown below.)



2. Plug the power cable into a properly grounded electrical outlet.



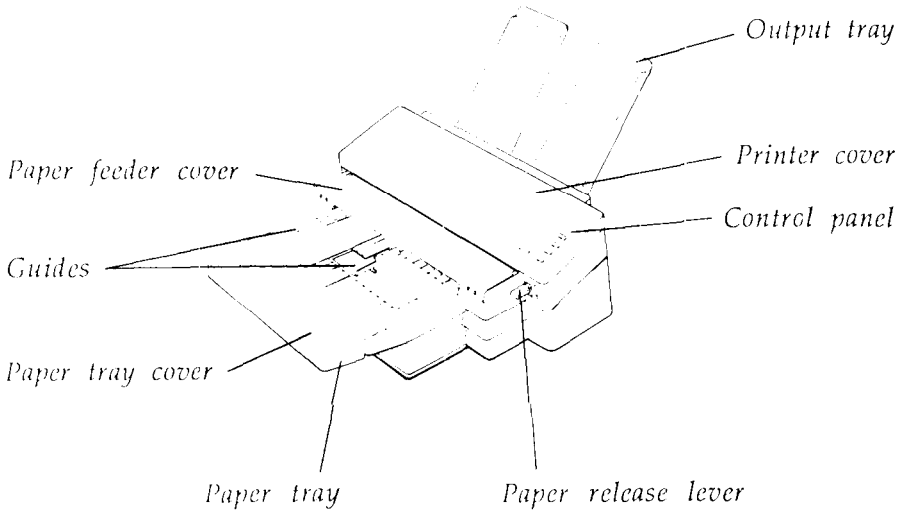
---

## Your Printer's Components

The EPI-4000 printer is designed to make all the features easy to use. This section introduces the parts of the EPI-4000 so that you can easily find them as you load and test your printer.

### Front View

When you look at your EPI-4000 printer from the front, you can see most of the design features.



The *paper tray* holds stacks of paper and feeds them automatically through the printer.

The *paper tray cover* protects your paper supply. You can also use the *paper guides* to print a single sheet or envelope without changing the paper inside the paper tray.

The *paper feeder cover* protects the feeding mechanism that carries paper through the printer. You lift this cover to find the *envelope lever* used to print envelopes. You can also see the *envelope guide* used to align envelopes when you print envelopes one at a time.

You lift or lower the *paper release lever* to set the printer feeding mechanism for automatic or manual feeding. Read more about paper handling in Chapter 3.

The *printer cover* reduces noise while the EN-4000 prints.

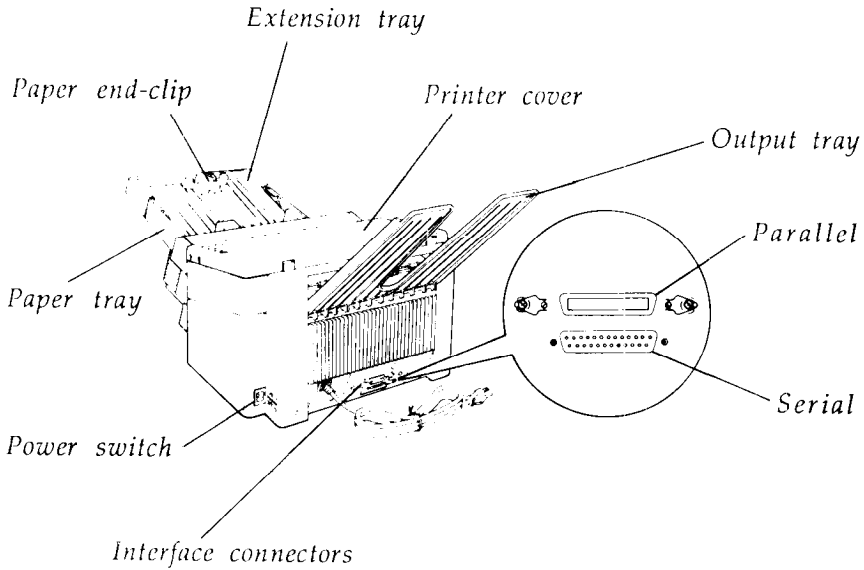
On the right side of the printer cover is the *control panel*, where the most common printing tasks are controlled. See Chapter 2 for a complete description of the buttons, lights, and display.

The *output tray* receives printed pages and envelopes.



## Back View

The illustration below shows the printer from the back with the paper cover off.



Inside the *paper tray*, you see the *paper-end clip*, which you can adjust to hold the paper stack in place.

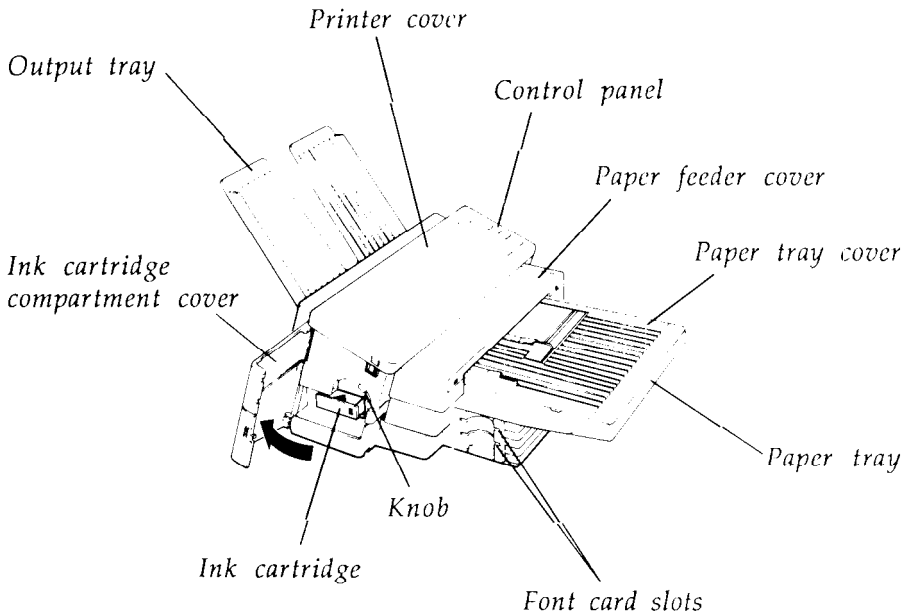
You can pull out the *extension tray* to accommodate long sheets of paper. See Chapter 3 for information about loading paper.

You use the *power switch*, located at the rear, to turn the printer on and off.

You connect your printer to your computer by connecting a cable to one of the two *interface connectors* at the center rear of your printer. The upper connector is for the *parallel interface*, and the lower connector is for the *serial interface*. Connecting the EPI-4000 to your computer is covered later in this chapter.

## Left Side View

The left side of the printer, as shown below, includes slots for optional font cards, the ink supply, and a knob for clearing paper jams.



## Your Printer's Components

On the left side of the printer just below the paper tray, you see two *font card* slots used to insert optional font cards. See Chapter 4 for information about optional font cards.

Open the *ink cartridge compartment cover* to see the *ink cartridge compartment*, where you install your printer's ink cartridges.

Inside the ink cartridge compartment, just above the cartridge, is a knob that you turn to remove jammed paper.



**WARNING:** Follow these steps whenever you turn your printer:

1. Press ON LINE to set the printer off line.
2. Wait three seconds; then turn off the printer.

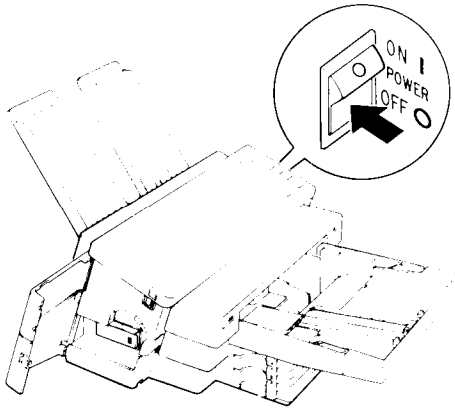
This process allows the printer to cap the print head

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## Charging the Ink Feeding System

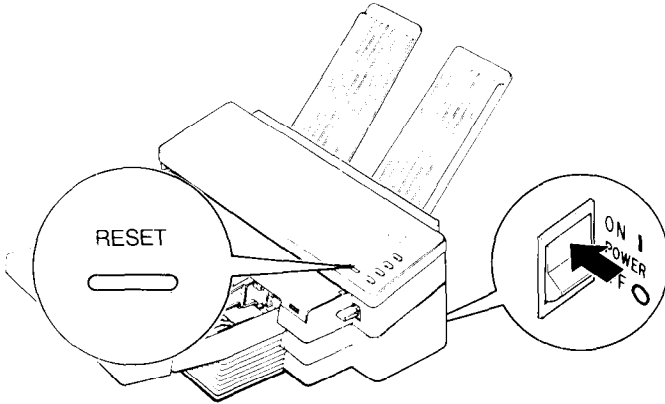
You need to charge the ink feeding system only once, the first time you set up your printer. You do not need to repeat this step, even if you move the printer to a new location and set it up again. Follow these steps to charge the ink feeding system:

1. Make sure the printer is turned off and the ink cartridge is installed.

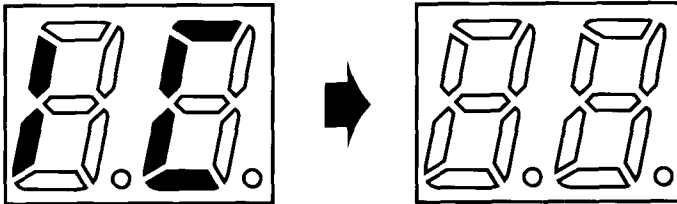


## Charging the Ink Feeding System

2. Hold down the RESET button while you turn on the printer.



During charging, the display reads IC and then the ink charging countdown appears on the display. When the cycle is complete, both the display and the ON LINE indicator light go off.



**Note:** You do not need to charge the ink feeding system when you replace an ink cartridge.

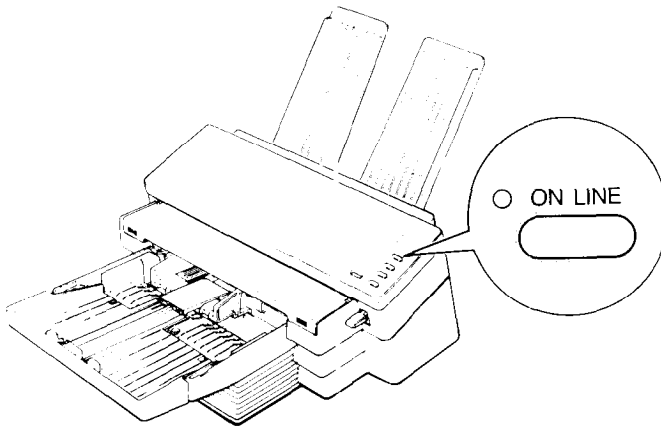
---

## Loading Paper to Print a Self Test

Now that you've assembled, set up, and plugged in your printer, you're probably anxious to see it print. Follow the instructions below to load standard letter size paper to print the self test. Chapter 3 describes how to load 11 x 17-inch (ledger or B) size and other different paper sizes.

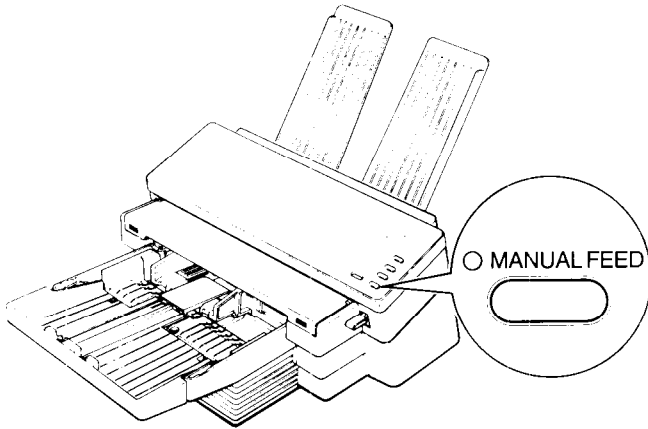
**Note:** You do not need to **connect** the printer to your computer to run the self test.

1. Make sure the printer is off line. If not, press ON LINE to set the printer off line.

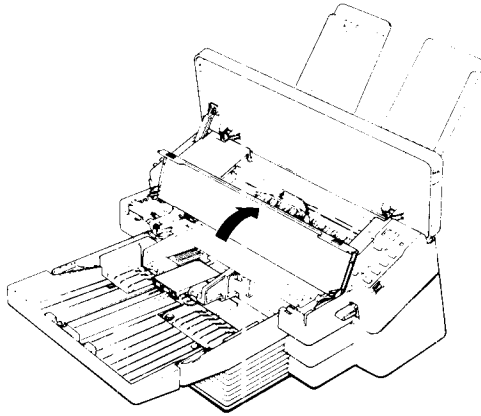


# Loading Paper to Print a Self Test

2. Press MANUAL FEED. The MANUAL FEED light goes on.



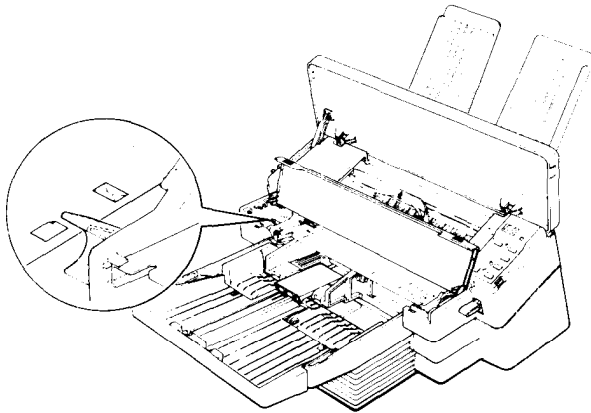
3. Open the paper feeder cover.



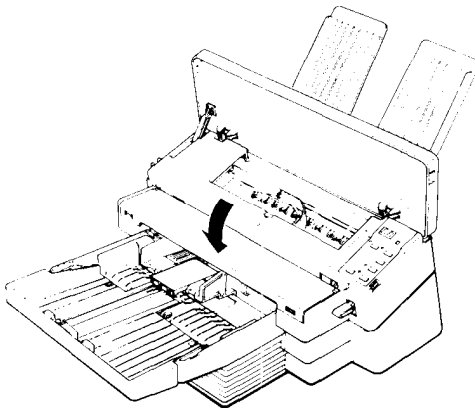


## *Loading Paper to Print a Self Test*

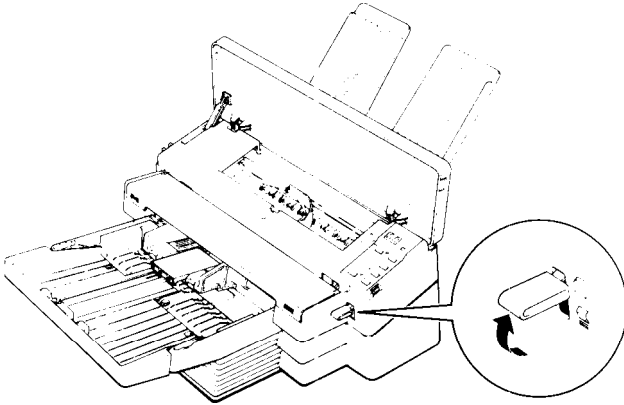
4. Move the envelope lever to the single-sheet position.



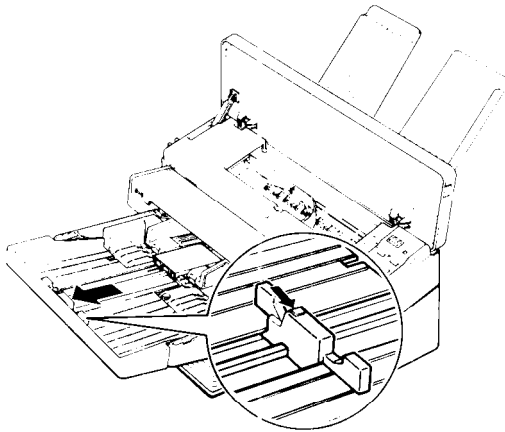
5. Close the paper feeder cover.



6. Move the paper release lever to the single-sheet position.

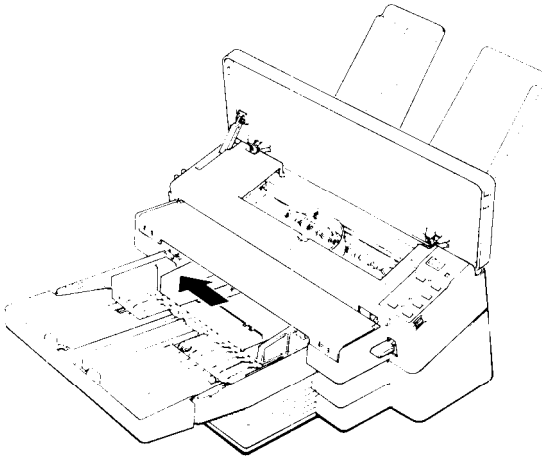


7. Open the paper tray cover. Squeeze the tab on the paper-end clip and slide it toward you until the clip rests against the end of the paper tray.

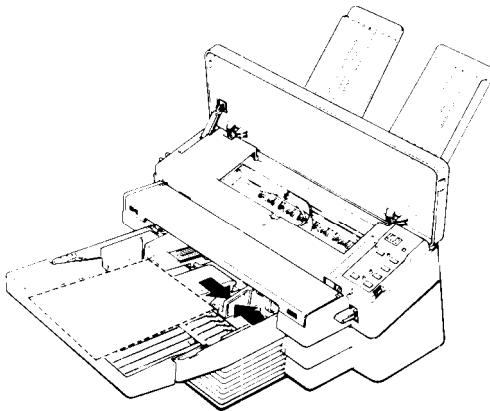


## *Loading Paper to Print a Self Test*

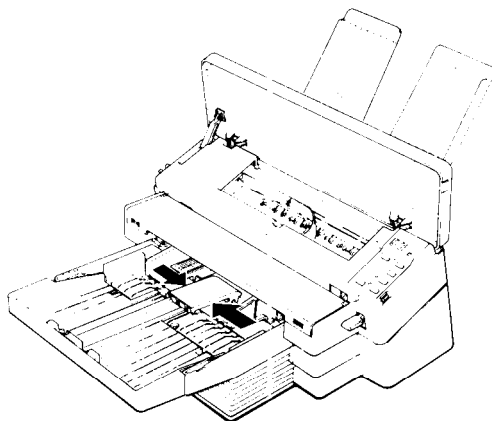
8. Move the left paper guide until it clicks into place at the left side of the paper tray.



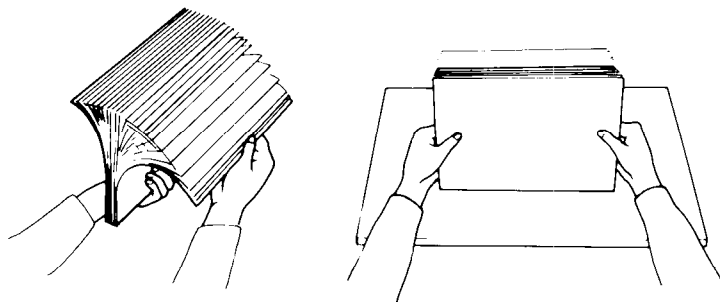
9. Move the right paper guide to roughly match the width of your paper.



10. Move the paper support so it is centered between the paper guides.



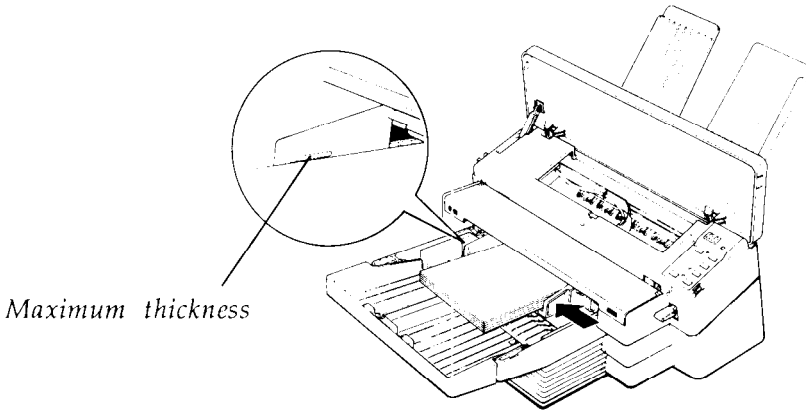
11. Take a stack of letter size paper, fan it, and then tap the edges against a flat surface to even the stack.



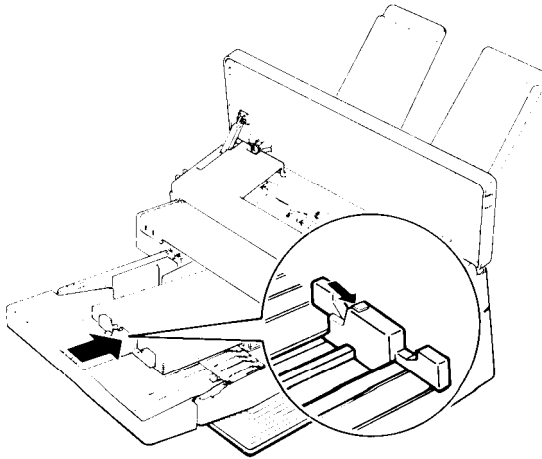
**CAUTION:** The paper stack should be no higher than the on the left paper guide to avoid causing a paper jam.

## Loading Paper to Print a Self Test

12. Insert the stack of paper between the left and right paper guides. Press down a little on the edge of the paper that enters the printer first. Then push the stack in gently as far as it will go; next adjust the right paper guide so it rests lightly against the paper stack.



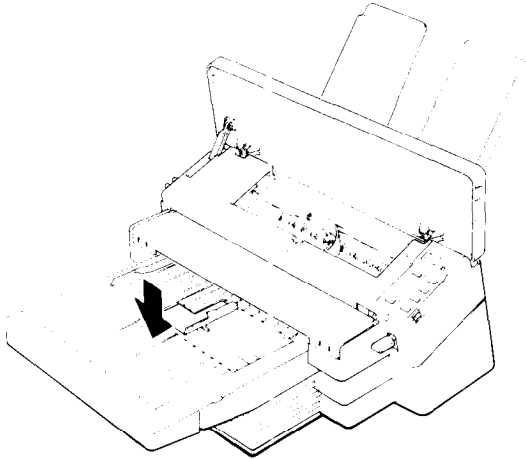
13. Slide the paper-end clip until it fits lightly against the end of the stack.





**CAUTION:** Be sure to set the paper-end clip lightly against the end of the paper to avoid paper feeding

14. Put the cover back over the paper tray.



high humidity can cause poor print quality.

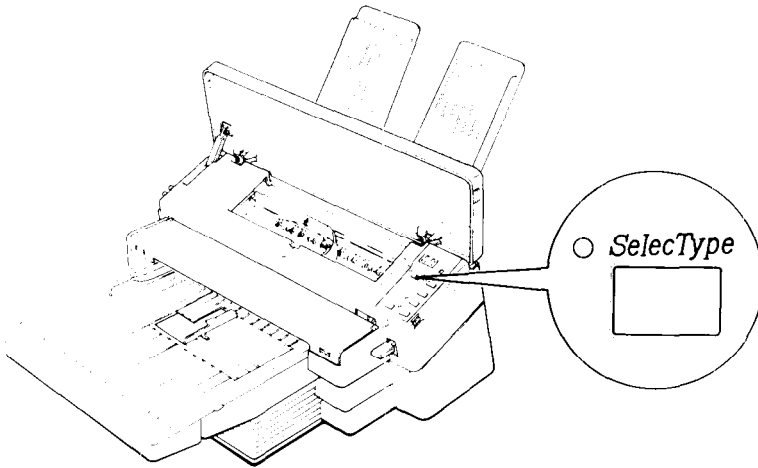
Now you're ready to print the self test.

---

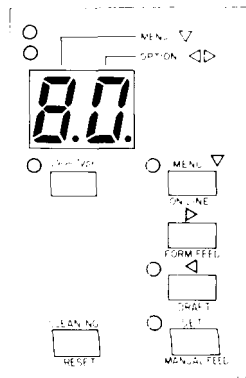
## Printing the Self Test

Once you have loaded letter size paper, follow the instructions below to print the self test.

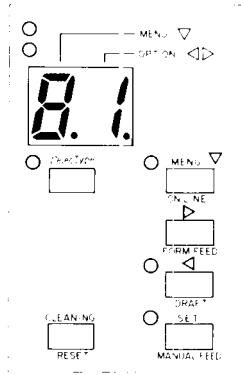
1. Press ON LINE to set the printer off line.
2. Open the printer cover and press SelectType to enter SelectType mode.



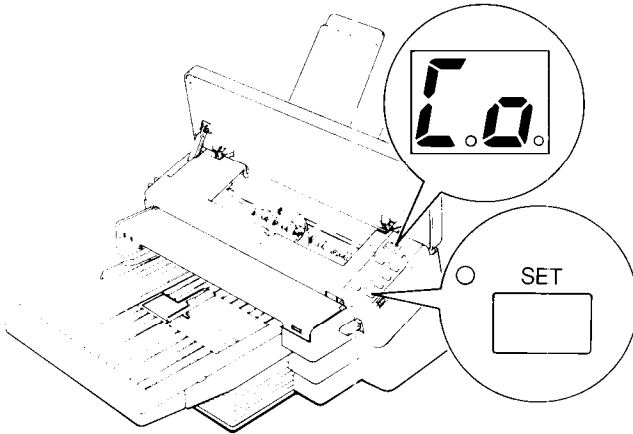
3. Press MENU several times to change the left digit to 8.



4. Press ◀ or ▶ to change the right digit to 1. Your display should read 81.

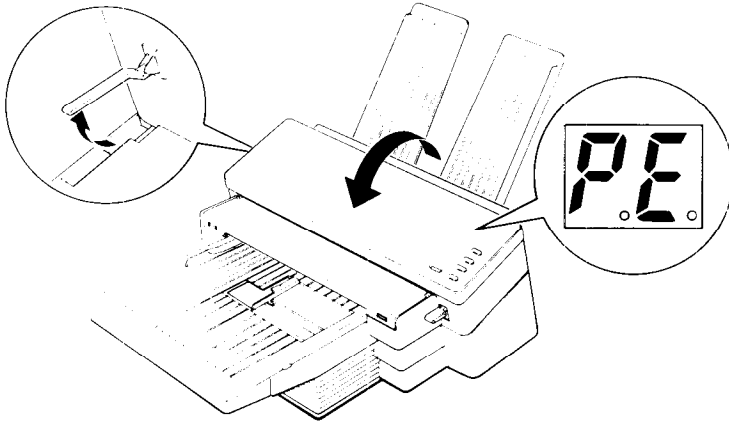


5. Press SET. The display reads Co.



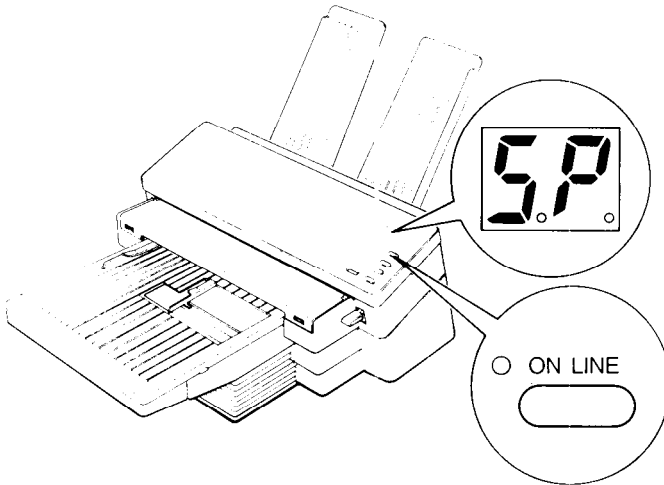


6. Close the printer cover. The display reads *PE*.



**CAUTION:** Be sure to close the printer cover when you want to print. If you press the SET button when the printer cover is open, the printer loads the paper but cannot print until the printer cover is closed.

7. Press MANUAL FEED. The MANUAL FEED light goes off.
8. Press ON LINE. The display reads *SP* and your printer begins the self test.



The self test is a one-page printout. When the printer is finished printing the self test, it sends the page to the output tray. A sample of the self test output is shown below.

```
!"#$%&'()*+,-./0123456789:;<=>?@ABCDEFGHIJ  
!"#$%&'()*+,-./0123456789:;<=>?@ABCDEFGHIJK  
!"#$%&'()*+,-./0123456789:;<=>?@ABCDEFGHIJKL  
!"#$%&'()*+,-./0123456789:;<=>?@ABCDEFGHIJKLM  
!"#$%&'()*+,-./0123456789:;<=>?@ABCDEFGHIJKLMN  
!"#$%&'()*+,-./0123456789:;<=>?@ABCDEFGHIJKLMNO  
!"#$%&'()*+,-./0123456789:;<=>?@ABCDEFGHIJKLMNOP  
!"#$%&'()*+,-./0123456789:;<=>?@ABCDEFGHIJKLMNOPQ  
!"#$%&'()*+,-./0123456789:;<=>?@ABCDEFGHIJKLMNOPQR  
!"#$%&'()*+,-./0123456789:;<=>?@ABCDEFGHIJKLMNOPQRS  
!"#$%&'()*+,-./0123456789:;<=>?@ABCDEFGHIJKLMNOPQRST  
!"#$%&'()*+,-./0123456789:;<=>?@ABCDEFGHIJKLMNOPQRSTU  
!"#$%&'()*+,-./0123456789:;<=>?@ABCDEFGHIJKLMNOPQRSTUVWXYZ
```

### **If the Self Test Doesn't Print**

The most likely cause of a failed test is either a problem with the print head or a mistake in the SelecType panel settings. If the self test does not print properly, check the points below.

- If the paper jams, the display reads PJ. If you see this message, turn off the printer and remove the paper jam according to the section on clearing a paper jam in Chapter 6. Then load the paper again, as described earlier in this chapter.
- If the printer does not print or stops printing and the display reads IE, the ink cartridge may not be installed or may be installed incorrectly. Reinstall the cartridge as described earlier in this chapter.
- If the display reads 81 but nothing prints, you may not have pressed the SET button hard enough. Press SET again. The printer beeps as you press this button.
- If the printer cover is open, the printer cannot print. Close the printer cover.
- If the print is faint or uneven, the ink delivery system may not be charged with ink. Follow the steps under Charging the Ink Delivery System earlier in this chapter. If you have charged the printer, follow the cleaning procedure described in Chapter 5.
- If the printout has a blurred appearance, you may be printing on the wrong side of the paper or you may be using the wrong type of paper. Try the other side of the paper; then, if necessary, see Chapter 3 for information on choosing paper.

If you've checked all the points mentioned above and the printer still does not print the self test correctly, contact your Epson dealer for assistance.

---

## **Connecting the Printer to Your Computer**

Your EPI-4000 has two separate interface connections: a parallel interface and an RS-232C compatible serial interface. If you are unsure which one your computer requires, check your computer manual.

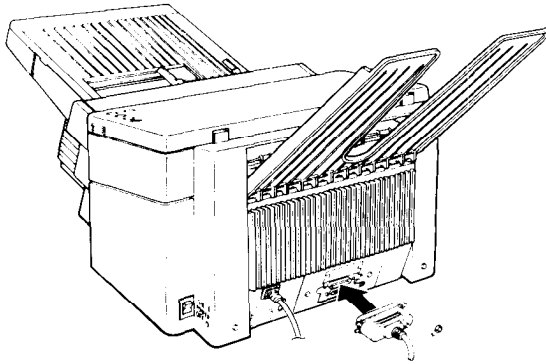
The EPI-4000 is set up at the factory for parallel communication. If your computer has a parallel interface and you have a suitable shielded cable, you can connect to most computers immediately. Just follow the steps under Connecting the Parallel Interface, below.

If you need to use the serial interface, be sure to change the SelecType setting as described in Chapter 2 before you connect the serial interface. If you have a computer that requires a different type of interface, use one of the optional interfaces described in Chapter 4.

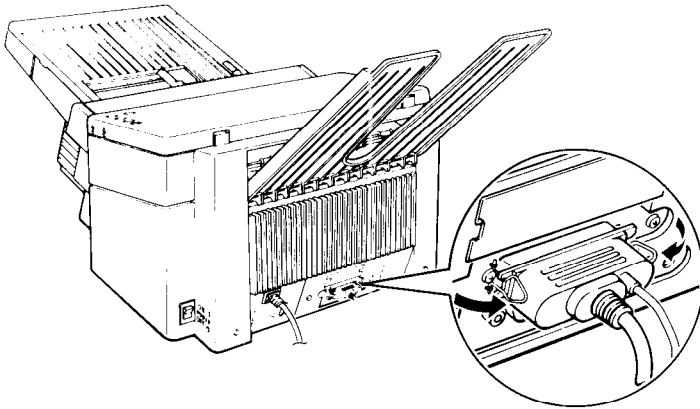
## **Connecting the Parallel Interface**

To use the printer's standard parallel interface, connect a shielded parallel interface cable as described below.

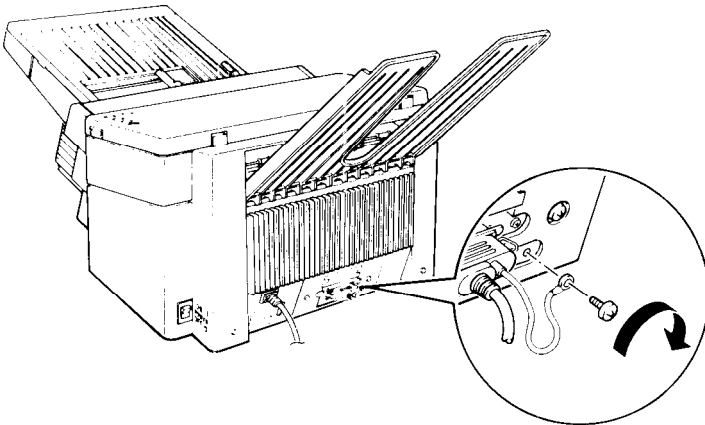
1. Make sure that both your computer and printer are turned off.
2. Plug the cable connector securely into the parallel connector of the printer.



3. Squeeze the wire clips together until they lock side of the connector.



Note: If your cable has a ground wire, use a screwdriver to attach it to the ground screw directly beneath the interface connector.

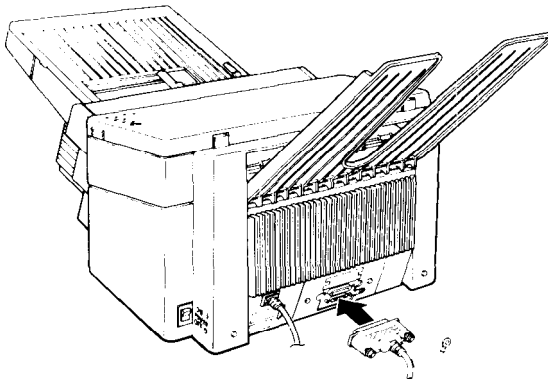


4. Plug the other end of the cable into the computer. If there is a ground wire at the computer end of the cable, use a screwdriver to attach it to the ground connector of the computer.

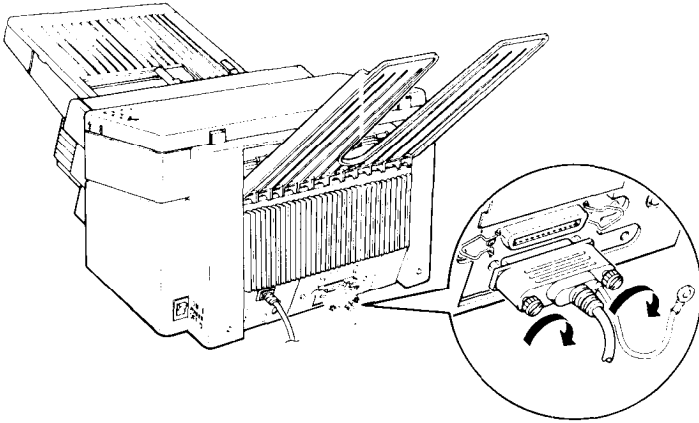
### **Connecting the Serial Interface**

If you use the EPI-4000's serial interface, use a properly shielded cable and make sure it is the correct one for your computer. Before following the steps below to connect the serial interface, change the interface setting using the SelecType interface menu, as described in Chapter 2.

1. Make sure that both your computer and printer are turned off.
2. Plug the connector of the cable securely into the serial port of the printer.



3. Use a screwdriver to secure the cable by tightening the screw on each side of the connector.

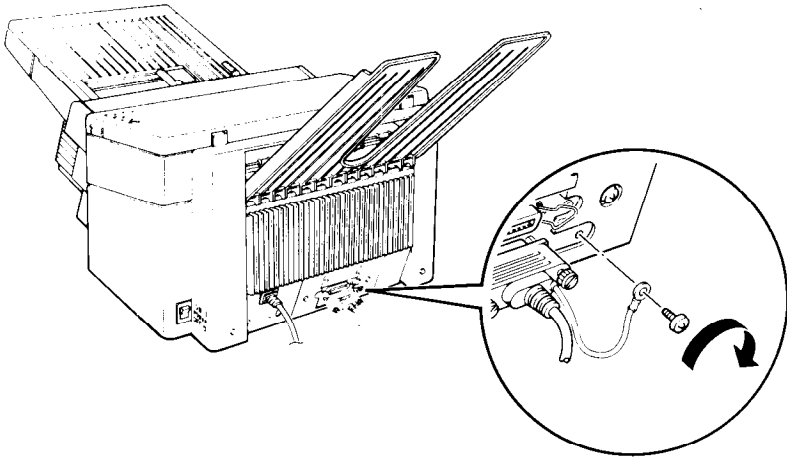




## Connecting the Printer to Your Computer

### Note:

- If the screws that come with the cable do not fit into the screw locks of the printer's interface connector, replace your screws with the extra ones provided with the printer.
- If your cable has a ground wire, use a screwdriver to attach it to the ground connector to the right of the interface connector.



4. Plug the other end of the cable into the computer. If there is a ground wire at the end of the cable, attach it to the ground connector of the computer.

---

## Using Your Printer with Software

Now that you've set up the EPI-4000 printer and are more familiar with its operation, start using it with your application programs.

Most applications programs let you specify the type of printer you are using so that the program can take full advantage of the printer's features. Many of these programs provide an installation or setup menu that presents a list of printers to choose from.

If your program has a printer selection menu, follow the instructions below to get the best performance from your EPI-4000 printer.

### Selecting the Best Printer Mode

The EPI-4000 has three printer modes, also called emulations. It is factory set to LaserJet series II emulation mode and this factory setting gives you the fullest range of features. Simply leave the printer in HP emulation mode and choose one of the printers below from your program's setup menu. They are listed in order of preference.

HP LaserJet series II™ or HP LaserJet 2000™

HP LaserJet Plus™

HP LaserJet 500™

HP LaserJet™

<p><b>Note:</b> If you use 11 x 17-inch (ledger or B) size paper for most of your printing jobs, choose the HP LaserJet 2000. For more about HP emulation mode, see Appendix B.</p>
---

If none of the printers listed above are available from your program, use the Epson LQ or FX mode. If you use LQ or FX mode, choose one of the following printers (listed in order of preference).

**LQ Mode**

LQ-1050/850

**SQ-2500**

LQ-2500

LQ-1000/800 (expanded ESC/P)

LQ-500/510

LQ-1500 (with version 2 ROM)

LQ printer

**FX Mode**

FX-1050/850

FX-286e/86e

FX-286/185/85

FX-100/80

FX printer

If none of these printers are listed among your program's options, choose the first available of the following: EX, JX, LX, RX, MX, Epson printer, Standard printer, or Draft printer.

**How Your Printer Prints**

When you print a document, the data for the document is temporarily stored in the printer's memory. The printer's memory contains data from the time it receives a print command until it finishes the last page of the print job.

If the print mechanism is not moving during a print job, the printer may be composing a page in memory. It may take a few minutes to image a complex page or graphics before printing it.

If you don't know whether a print job is complete, look at the display. If the display reads *FF*, the print job is not finished and the printer's memory contains data.

If you want to stop a print job before it has finished and clear the printer's memory, cancel the print job using your application program and then press RESET to reset the printer.

# Chapter 2

## Using the Printer

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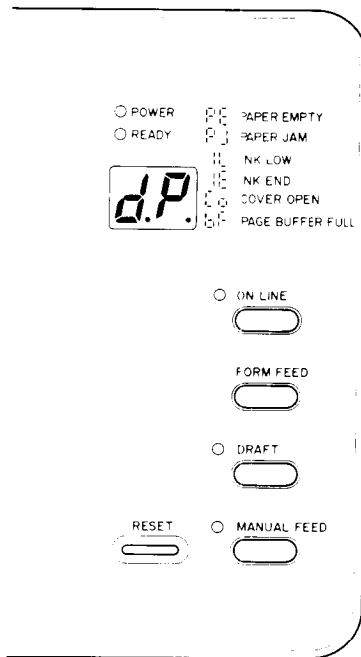


## The Control Panel

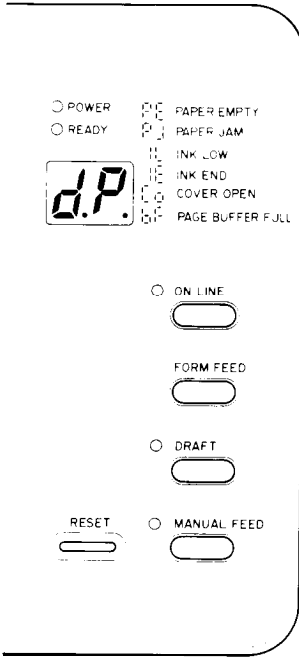
The EPI-4000 control panel consists of three elements: a light emitting diode (LED) display, indicator lights, and buttons. The lights and display show you the status of the printer. You use the buttons to control printer settings and paper handling functions.

### The Display

The display shows either the printer's current status (including maintenance and error messages) or printer settings.



## Indicator Lights



### POWER

On when the printer is turned on and power is supplied.

### READY

On when the printer is ready to accept data. This light flickers when data is received.

### ON LINE

On when the printer can receive and print data from the computer.

### DRAFT

On when draft printing mode is selected  
Off when letter quality mode is selected.

### MANUAL FEED

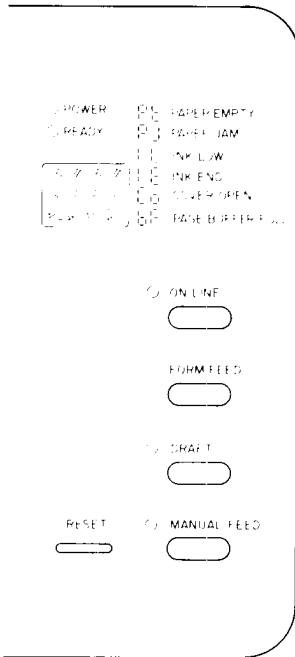
On when the paper feeder mechanism is in the manual feed position.

### SelecType

On when SelecType mode is active. This light is visible only when the printer cover is open.

## Buttons

Most of the buttons have more than one name and function, depending on whether the printer cover is open or closed and what mode the printer is in. The following section describes the functions of the buttons when the cover is closed.



### ON LINE

Controls the printer's on line/off line status. When the printer is on line, the ON LINE light is on and the printer can receive and print data from the computer. Press this button to switch between on line and off line status.

### FORM FEED

When the printer is off line, press FORM FEED to print any data stored in the printer memory and eject a single sheet of paper.

### DRAFT

Controls whether printing is in draft or letter quality mode. Because letter quality is the default mode, the printer is turned on the DRAFT light is off. Press this button to switch between draft and letter quality printing. If you press DRAFT during printing, the draft mode begins with the next page printed.

Use this button to choose unidirectional printing for higher print quality. With the printer off line, press DRAFT for more than 3 seconds to enter unidirectional mode. The printer is factory-set for bidirectional printing so you must set the printer each time you turn it on to enable this mode.

### **MANUAL FEED**

Ordinarily, this light is off and paper feeds automatically from the paper tray. When you want to feed paper manually, set the printer off line and press this button. When you want to print on continuous paper, press **MANUAL FEED** to release the paper in the paper tray.

### **RESET**

When the printer is off line and no data is in memory, press **RESET** once to cancel any settings made by printer commands and to cancel draft printing and manual feed modes, if they are selected. Hold this button down for 5 or more seconds to reset all printer settings to factory settings. (The printer cannot be reset with this button if it was set off line by a fatal error.)

**Note:** If you want to stop the printer while it is printing, cancel the print job using your application program and then press **RESET** to reset the printer.

When the printer cover is open, the five buttons described above have a different shape and two sets of labels. Their functions, however, are the same as long as you are not in **SelectType** mode (whenever the **SelectType** light is off). You can also see a sixth button, **Select Type**, which is only visible when the printer cover is open. **SelectType** functions for each button are explained in the next section.

If you use the parallel interface and print on letter size paper, you may not need to use **SelectType** except to run the status sheet or self test.



---

## SelecType Overview

The SelecType feature gives you a simple means to control your printer. When you lift the printer cover and use the SelecType panel, you can control most of the printer's functions—from the simplest to the most complex.

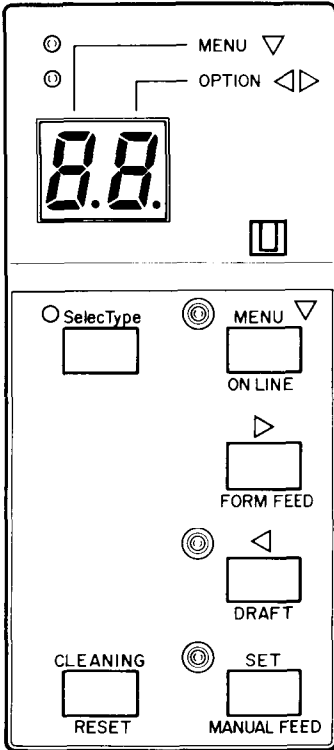
Use SelecType's menu-based system to do the following:

- Change your printer configuration without adjusting any DIP switches
- Select most font or print options without entering software commands.

You don't have to learn everything about SelecType to use your printer, but a basic understanding of the menu structure and the SelecType panel helps you control the most common functions quickly.

When you are in SelecType mode, the left digit of the display shows a number or letter corresponding to one of SelecType's 16 menus. The right digit of the display shows a number or letter corresponding to an option for that menu. See your Quick Reference card for complete tables of SelecType menus and options.

SelecType panel buttons and their functions are listed below. Lift the printer cover to reach the SelecType panel.



### SelectType

Press this button to enter or exit SelectType. If SelectType mode is active, the SelectType light is on.

### MENU

When the SelectType light is on, press this button to increase the menu (left) digit of the display. This moves you down the list of menus.



When SelectType is on, press ► to increase the option (right) digit of the display. Use this to select the desired option.



When SelectType is on, press ◀ to decrease the option (right) digit of the display. Use this to select the desired option.

### SET

When SelectType is on, press SET to save the option setting shown on the display.

### CLEANING

When SelectType is on, press CLEANING to automatically clean the print head.

## Using SelecType

Follow these steps to use SelecType:

1. Press ON LINE to set the printer off line and lift the printer cover.
2. Press SelecType to enter SelecType mode.
3. Press MENU to choose the menu digit.
4. Press ◀ or ▶ to select the option digit.

Note: If you move past the number or digit you want while pressing MENU, ◀, or ▶, keep pressing the button until the digit you want reappears.

5. Verify your choice on the display.
6. Press SET to save the new setting.



**CAUTION:** A new setting does not take effect until you save it by pressing SET. Be sure to always press SET after you change a setting.

---

## SelecType Menus and Options

This section lists all menus and options available when you use SelecType. Most menus and options are the same whether you're working in HP, LQ, or FX emulation mode. Four of the menus, however, have a different function when your printer is set for LQ or FX emulation mode. These four LQ/FX menus are listed later in this chapter. See the Quick Reference card for tables of HP, LQ and FX emulation mode menus and options.

## HP Emulation Mode Menus

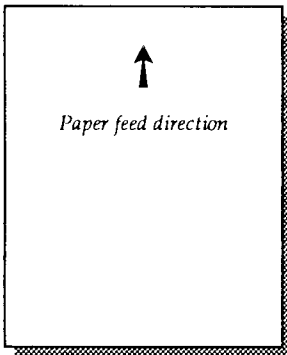


### Menu 0: Paper Size

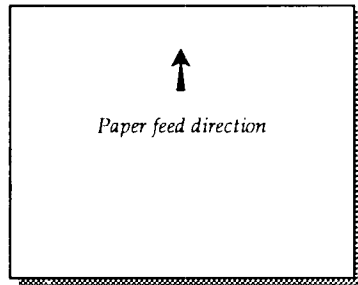
Because the EPI-4000 prints on a wide variety of paper sizes, the paper size menu includes 15 options. The factory default setting is 00: letter size paper. See Chapter 7 for precise dimensions of each paper size.

If you want to use any paper other than standard letter size paper, use the paper size menu to change your setting to match the size of paper you load into the printer.

As you look at the table below to find the setting you need, notice that there are two settings for letter size and A4 paper. You can load these two types of paper in either portrait position (with the width of the paper inserted into the printer first) or in landscape position (with the length of the paper inserted into the printer first). Use landscape position when you need a wider printing space for spreadsheets, graphics, or tables. Examples of portrait and landscape paper position are shown below.



*Portrait position*



*Landscape position*

## SelectType Menus and Options

Option	Setting
0	Letter size (8 1/2 in. x 11 in.)
1	Legal size (8 1/2 in. x 14 in.)
2	Executive size (7 1/4 in. x 10 1/2 in.)
3	B (ledger) size (11 in. x 17 in.)
4	Letter size, landscape (11 in. x 8 1/2 in.)
5	A4 size (8 1/4 in. x 11 3/4 in.)
6	A3 size (11 3/4 in. x 16 1/2 in.)
7	A4 size, landscape (11 3/4 in. x 8 1/4 in.)
8	#10 envelope (9 1/2 in. x 4 1/8 in.)
9	#6 envelope (6 1/2 in. x 3 5/8 in.)
A	DL envelope (8.7 in. x 4.3 in.)
B	11" length continuous (12 in x 11 in.)
C	12" length continuous paper (12 in. x 12 in.)
D	8.5" length continuous paper (12 in. x 8 1/2 in.)
	A4 size continuous paper (9 1/4 in. x 11 3/4 in.)

Note: Envelopes can be loaded in landscape position only. If you are using FX emulation mode, you cannot select DL-size envelopes.

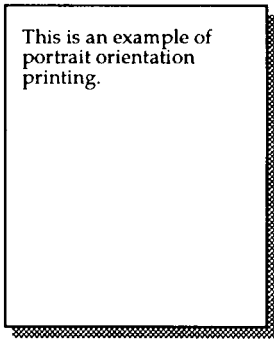


### Menu 1: Printing Orientation

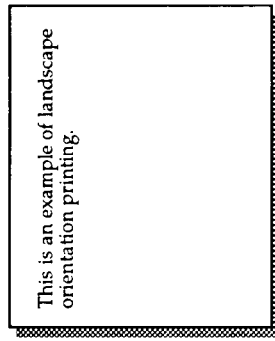
You can set your printer to print across the width of the page (portrait orientation), or across the length of the page (landscape orientation). The factory default setting is 10: portrait.

Option	Setting
0	Portrait
1	Landscape

The illustration below shows printing in portrait and landscape orientation.



Portrait orientation



Landscape orientation



Menu 2: Font Source

Use the font source menu to specify one of four possible sources of fonts: your printer's internal fonts, fonts on a font card in slot A, fonts on a font card in slot B, or fonts you have downloaded to the printer's memory from your computer. The factory default setting is 20: internal.

Because the internal fonts are built-in to your computer at the factory, option 0 is always available. The other option numbers may or may not appear, depending on whether or not you have inserted a font card into slot A or B or have actually downloaded fonts from your application. The symbol set menu setting may change when you change the font source option.

Opt ion	Setting
0	Internal
1	Slot A
2	Slot B
3	Downloaded



### Menu 3: Font Number

Use the options on this menu to choose the specific font you want to use. The options available on this menu change depending on the setting of the font source menu. For example, if the font source menu setting is 21, and you insert a font card in slot A, the font number options for this menu reflect the fonts available on the card. The symbol set may change when you change the font number option. Listed below are those options available when the font source menu is set to the printer's internal fonts. The factory default setting is 30: Courier Upright.

Option	Setting
0	Courier Upright
2	Courier Bold
4	Line Printer

A sample printout using the printer's internal fonts is shown below:

```
0 COURIER          ABCDEFGHIJabcdefghij0123!"#$%&'()*+,-./
2 COURIER BOLD    ABCDEFGHIJabcdefghij0123!"#$%&'()*+,-./
4 LINE PRINTER    ABCDEFGHIJabcdefghij0123!"#$%&'()*+,-./
```

**Note:** When you use a font from an optional font card, select the font number listed on the card. If you download two or more fonts to the printer's memory, you must use software commands to choose the font number.



#### **Menu 4: Symbol Set**

The default setting for this menu is suitable for most applications in the USA. You may want to change the symbol set setting if you are using a language other than English. See the tables in Appendix A for a list of all characters in each symbol set. The factory default setting is SO: Roman-8.

Opt ion	Setting
0	Roman-8
1	IBM-US
2	IBM-DN (Danish/Norwegian)
3	ISO 4 (United Kingdom)
4	ISO 21 (German)
5	ISO 69 (French)
6	ISO 15 (Italian)
7	ISO 60 (Norwegian 1)
8	ISO 11 (Swedish)
9	ISO 17 (Spanish)
A	ISO 6 (ASCII)
B	ISO 16 (Portuguese)
C	ISO 14 (JIS ASCII)
D	ISO (Latin 1)
E	Legal





### Menu 5: Auto Continue

The setting for the auto continue menu determines whether a page continues to print after certain errors occur. To make the printer stop when an error occurs, set auto continue to off. The factory setting is 51: on.

Option	Setting
0	Off
1	On

Setting auto continue on or off determines what the printer does when one of the following errors occurs:

#### *Paper size error (PS)*

If the printer is set for a size of paper different from the size loaded in the paper tray, a paper size error occurs. The display reads *PS* and the printer goes off line.

#### *When auto continue is off:*

- If the auto continue menu is set to off (50), you can press **MANUAL FEED** to recover from the paper size error. Your printer ejects the paper and goes off line. Then you can change the paper to the same size as the SelectType setting. Press **ON LINE** to print on the correct size of paper.
- If you want to continue printing on the original, off-size paper, just press **ON LINE**. Your printer will print on that paper; however, some data may be lost if the paper size is narrower than the SelectType size setting.

*When auto continue is on:*

- If the auto continue menu is set to on, printing resumes one second after the PS error occurs. When printing resumes, you may lose data if the actual paper size is narrower than the SelecType paper size setting.

*Buffer Overflow Error (b0 or bF)*

When the printer's memory cannot hold all the data for a page, or the downloaded font or macros take up too much memory, a buffer overflow error occurs. When this happens, the printer goes off line and the display reads b0 or bF.

*When auto continue is off:*

- If you want to continue printing, press ON LINE. Your printer prints the page of data in its memory but some data may be lost. If an HP LaserJet series II printer receives the complete data, it prints the amount of data in the memory and ejects the paper. However, the EN-4000 prints it, receives the next data in the correct position, and then resumes printing. For this reason, in many cases you can still print a full page image, even with limited memory.

*When auto continue is on:*

- Printing resumes automatically after a buffer overflow error.



### Menu 6: Automatic Margins

When this menu is on, the printer leaves a margin between the last printable line on one page and the first printable line on the next page. Most software applications take care of your top and bottom margins for you and control when the printer skips to a new page, so you may never need to change this menu. The factory default setting is 61: on. If you set the menu to off, no top or bottom margin is established.

Option	Setting
0	Off
1	On

Note: Whenever this menu is changed, the top margin and text length are reset to their default values.



### Menu 7: Lines Per Page

This menu sets a fixed number of lines to be printed on a page. It also changes the line spacing. This setting is affected by the current paper size, orientation, and font settings. The factory setting for the number of lines is 60.

Changing the setting for this menu is completely different from other SelectType menus. The following steps explain how to change the setting for this menu.

1. Press ON LINE to set the printer off line.
2. Press SelectType to enter SelectType mode.

3. Press MENU to change the left digit of the display to 7. This is the lines per page menu.
4. Press SET. The display flashes the current setting.
5. Press ◀ ▶ to increase or decrease the setting (unlike other settings, this changes both digits).
6. When the number of lines you want appears on the display, press SET to save the setting.

The maximum number of lines that can be printed on a page changes according to paper size, orientation, and font (as well as margins you may have set with your application program). The display will not show a number higher than this maximum. If you continue to press ◀ ▶ beyond the maximum number of lines, the display returns to 00. Setting the number of lines to 00 sets the line spacing to 1/6 inches. If you use printer commands or your application program to set the number of lines to more than 99, the display reads ≡≡ when you enter SelectType and select this menu.

It is usually best to leave the lines per page setting at 60 and use your application programs to set the top and bottom margins.



### Menu 8: Status Sheet/Self Test

Use this menu to print a status sheet or a self test. The self test is a one-page sample showing output from your printer. It lets you check printer operation without sending a print job from your computer.

The status sheet is a report containing information on your printer configuration and SelecType settings and print samples of the available fonts. The status sheet makes an excellent SelecType menu and is a handy way to check all of your settings. The factory setting is PO: Status sheet.

Option	Setting
0	Status sheet
1	Self test

Note: Only letter or A4 size paper should be used to print status sheets or self tests. Other sizes of paper cause a paper size error. Your printout may also be incomplete if you use paper smaller than letter size.

Choose the status sheet or self test option and press SET (to save the setting). Close the printer cover. When the status sheet or self test is finished printing, the printer goes off line automatically. A sample of the self test is shown below.

```
./ 0 1 2 3 4 5 6 7 8 9 ; <=>?@ABCDEFGHIJKLMN OPQRSTUVWXYZ  
/ 0 1 2 3 4 5 6 7 8 9 ; <=>?@ABCDEFGHIJKLMN OPQRSTUVWXYZ  
0 1 2 3 4 5 6 7 8 9 ; <=>?@ABCDEFGHIJKLMN OPQRSTUVWXYZ  
1 2 3 4 5 6 7 8 9 ; <=>?@ABCDEFGHIJKLMN OPQRSTUVWXYZ  
2 3 4 5 6 7 8 9 ; <=>?@ABCDEFGHIJKLMN OPQRSTUVWXYZ [  
3 4 5 6 7 8 9 ; <=>?@ABCDEFGHIJKLMN OPQRSTUVWXYZ [\n  
4 5 6 7 8 9 ; <=>?@ABCDEFGHIJKLMN OPQRSTUVWXYZ [\n]
```



### Menu 9: Printer Mode

The printer mode menu has three options: HP LaserJet series II emulation, Epson LQ-2500 emulation, and Epson FX-850/1050 emulation. The factory setting is 90: HP emulation mode. For best results, leave this setting at HP emulation mode and choose the HP LaserJet series II printer in your application program setup.

Option	Setting
0	HP LaserJet series II emulation
1	Epson LQ-2500 emulation
2	Epson FX-850/1050 emulation
3	(Reserved)

Note: Option 3 is reserved for future IC emulation cards. When these cards become available from Epson you can use the mode by inserting the card in slot A and setting this menu to 93.



### Menu A: Auto Line Feed

In most cases, this menu should remain at its factory setting A0: off. If lines print on top of one another, set auto line feed to A 1: *on*

Option	Setting
0	Off
1	<i>On</i>



**Menu b: Interface**

This menu gives you two options for the interface setting: parallel or serial. The factory setting is b0: parallel interface. If you choose to install an optional interface board, make sure this menu is set to parallel whether the board is for a serial or parallel interface. This is because all optional interface boards use the printer's internal parallel connections. The serial option is for use with the printer's internal RS-232C serial interface only.

Option	Setting
0	Parallel interface
1	Serial interface (RS-232C)



**Menu C: Baud Rate**

This menu appears only after you set the RS-232C serial interface option. You can use this menu to select a baud rate for serial communications. See your computer manual and software documentation for the proper setting. The factory setting with the RS-232C interface is C0: 19,200 baud.

Option	Setting
0	19200
1	9600
2	4800
3	2400
4	1200
5	600
6	300



**Menu d: Word length**

This menu appears only if you set the RS-232C serial interface option. You can select a word length for serial communications from two options: 8-bit word length or 7-bit word length. See your computer manual and software documentation for the proper setting. The factory setting with RS-232C is d0: 8-bit word length.

Option	Setting
0	8-bit word length
1	7-bit word length



**Menu E: Parity**

This menu appears only after you set the RS-232C serial interface option. It gives you parity options for serial communications. See your computer manual and software documentation for the proper setting. The factory setting with the RS-232C interface is E0: none.

Option	Setting
0	None
1	Odd parity
2	Even parity





**Menu F: X-on/ X-off**

This menu appears only after you have set the RS-232C serial interface option. See your computer manual and software documentation for the proper setting. The factory setting with the RS-232C interface is *F1* : enable.

Option	Setting
0	Disable
1	Enable

## **LQ/FX Emulation Mode Menus**

The menus in this section are available only if your printer is set to LQ or FX emulation mode. See the Quick Reference card for a complete table of LQ/FX emulation mode menus and options.



### **LQ/FX Menu 2: Condensed Print**

If you are using LQ or FX mode and you choose condensed print, characters are printed at about 60% of their normal width. The actual amount of reduction may differ if the default character spacing (10 cpi) has been changed. Also, some character spacings, 15 cpi for example, are already condensed and cannot be reduced further. The factory default setting is 20: off.

Opt ion	Setting
0	Off
1	On

This is 10 CPI printing.

This is condensed 10 CPI printing.

This is 12 CPI printing.

This is condensed 12 CPI printing.



### LQ/FX Menu 3: Typeface

The typeface menu available when you use LQ or FX mode displays the options listed below. Other options are available if you install optional font cards. The factory setting is 30: Courier.

Option	Setting
0	Courier
1	Prestige

Courier	ABCDEFGHIJabcdefghij0123!"#\$%&'()*+,-./
Courier Bold	ABCDEFGHIJabcdefghij0123!"#\$%&'()*+,-./
Prestige	ABCDEFGHIJabcdefghij0123!"#\$%&'()*+,-./
Prestige	ABCDEFGHIJabcdefghij0123!"#\$%&'()*+,-./



#### **LQ/FX Menu 4: Extended Graphics**

When you use LQ or FX mode, the factory setting for this menu is 40: Epson Extended Graphics character table. In most cases you leave this menu at its default setting.

The Extended Graphics table includes international characters, Greek characters, and mathematical symbols, as well as graphic characters for printing lines, comers, and shaded areas. If the font you are using contains italic characters, you can print italic characters without changing the setting to the Italic character table. If the font you are using does not contain italic characters, you cannot print italics, even if you choose the Italic character table.

If you want to print a downloaded character set, change the menu setting to 42.

See Appendix A for sample text of both character tables.

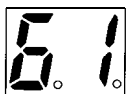
Option	Setting
0	Epson Extended Graphics character table
1	Italic character table
2	Download character set



**Menu 5: Country (LQ/FX)**

The country menu supports 13 international character sets. The factory default setting is 50: USA and works with most application programs. You may want to change the country menu setting if you are using a language other than English.

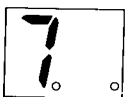
Option	Setting
0	USA
1	France
2	Germany
3	United Kingdom
4	Denmark
5	Sweden
6	Italy
7	Spain
8	Japan
9	Norway
A	Denmark 2
b	Spain 2
C	Latin America



### LQ/FX Menu 6: Automatic Margins

If your printer is set for LQ or FX emulation, this menu is valid only when you are printing on continuous paper using the optional push tractor unit. When this menu is on, the printer leaves a margin between the last printed line on one page and the first printable line on the next page. Most software applications take care of your top and bottom margins and control when the printer skips to a new page, so you should keep this menu at the factory default setting. Set automatic margins on only if your application program does not control the margins. For more details, see the manual included with the optional pull tractor. The factory setting is 60: off.

Option	Setting
0	Off
1	On



### Menu 7: Lines Per Page (LQ/FX)

When you are using LQ or FX mode, you can set the number of lines per page using this menu. The number of lines per page is calculated based on a line spacing of 1/6 inch, regardless of the current line space setting. The maximum number changes according to the current paper size and the orientation. The factory setting is 62 lines.

If you want to change the lines per page setting, follow the steps under Menu 7 in the section on HP emulation mode menus.

# Chapter 3

## Paper Handling

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Loading Paper .....	3-4
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Loading Paper Manually .....	3-16

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## Choosing Paper

The EPI-4000 is a plain paper printer designed to print on most commonly available types of single-sheet paper and envelopes. The type of paper you use, however, directly affects the quality of the printing. For best printing results, use high-quality, 17 to 24 lb. cotton bond or sulfite paper. Paper made for plain-paper copiers is also a good choice. The EPI-4000 can also print on other types of standard office paper, including memo sheets, letterhead, and paper for non-impact printers. Most correspondence quality paper works well in the EPI-4000. For best printing results on envelopes, use 12 to 24 lb. plain, bond, or air mail envelopes.

With ink jet printers such as the EPI-4000, you need to select paper of the proper absorbency. On paper that is too absorbent, the ink may bleed slightly and produce blurred characters. On paper that is not absorbent enough, the ink may take too long to dry and smear easily.

The finish and thickness of the paper is also important. Do not use paper that has either a raw, rough finish or a slick, coated finish. Also avoid paper that is too thick or too thin. Use smooth paper for best results.

The printing quality may be affected by which side of the paper you print on. On most paper one side of the paper produces better printing results than the other.

Before you buy paper in large quantities, it is best to test a few sheets in the printer. Also test any envelopes you plan to use with the EPI-4000.

<p><b>Note:</b> The printing quality on envelopes may be irregular because different parts of an envelope have different thicknesses.</p>
---



To test paper in the printer, load a single sheet from the package, run the self test as described in Chapter 1, and look at the results. Next load another sheet with the opposite side facing up and run the self test again. Check to see which side gives you the best printing quality.

See Chapter 7 for detailed specifications on the paper you can use with the EPI-4000.

**Note:** Ink jet printers are particularly sensitive to the condition of your paper. Keep your unused paper in its original packaging material and store it in a cool, dry place. Adverse storage conditions, such as high temperature or humidity, can harm your paper supply and decrease the printing quality.

---

## Loading Paper

The EPI-4000 can print on a wide range of paper and envelope sizes, including letter, legal, and ledger size paper, and #6, #10, and DL size envelopes. The printer's default (factory) paper size setting is letter size, so you can use single sheets of letter size paper without changing the paper size setting. To use envelopes or other sizes of single sheet paper, you need to change the paper size. For a list of the paper and envelope sizes you can use with the EPI-4000 or to change the paper size, see the section on the SelecType paper size menu in Chapter 2.

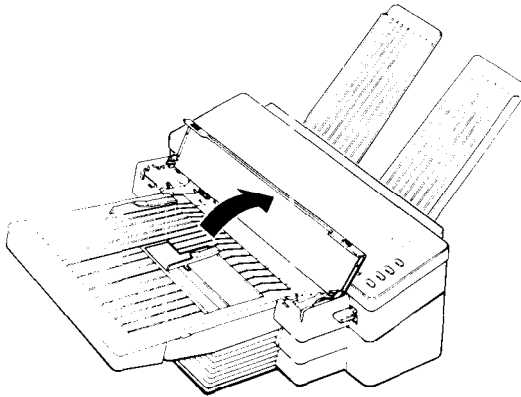
The EPI-4000 can also print pages in either of two orientations. Portrait (or vertical) orientation, the more common setting, prints across the page's width. You use portrait orientation for printing letters and other pages of text. Landscape (or horizontal) orientation prints across the page's length. Landscape orientation provides a wider printing space for spreadsheets, graphics, and tables. The default (factory-set) orientation is portrait. For more information on portrait and landscape orientation or to select landscape orientation, see the section on the SelecType printing orientation menu in Chapter 2.

**Note:** This chapter tells you how to choose and load single-sheet paper and envelopes. If you install the optional push tractor, the printer can also print on continuous paper. The optional push tractor comes with its own manual. For information on paper you can use with the tractor and for instructions on how to load paper onto the tractor, see the push tractor manual.

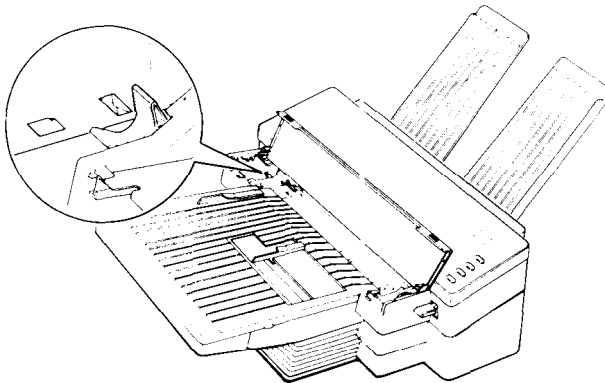
### Loading Paper into the Paper Tray

The paper tray holds up to 150 sheets of paper or up to 30 envelopes. To load paper or envelopes into the tray, follow these steps.

1. Press ON LINE to set the printer off line. The ON LINE light goes off. Then press MANUAL FEED to lower the pressure bar in the paper tray. The MANUAL FEED light goes on.
2. Open the paper feeder cover, as shown below.

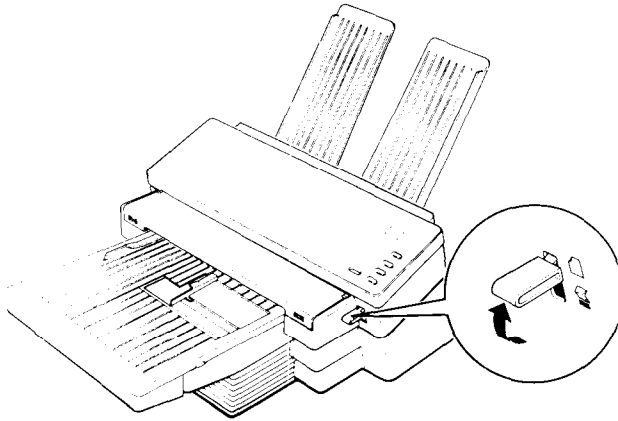


3. Move the envelope lever to the envelope position, as shown below. Then close the paper feeder cover.

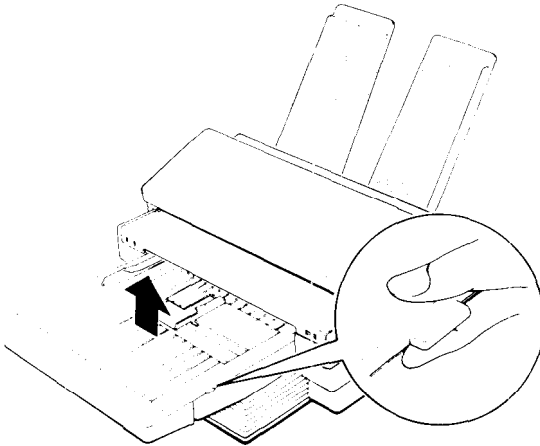


## Loading Paper

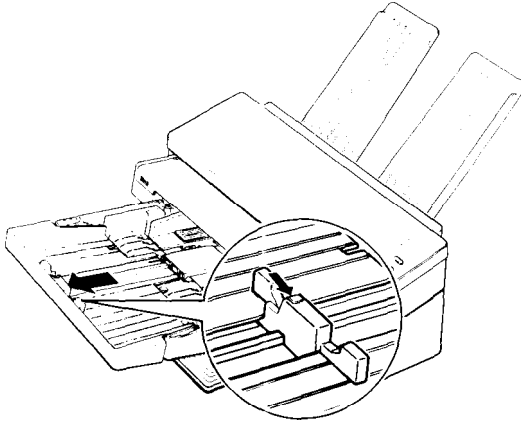
4. Make sure the paper release lever is up, as shown below.



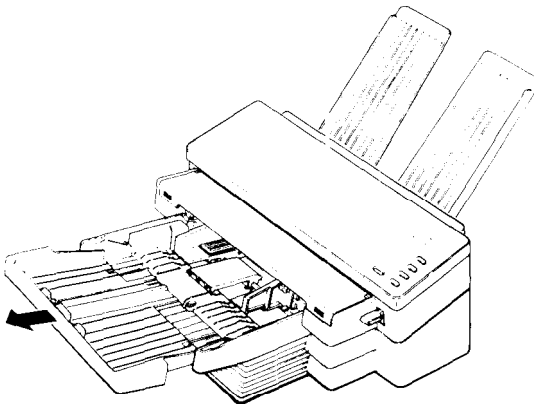
5. Remove the paper tray cover.



6. Press in the tab on the paper-end clip and move the clip toward you until it rests against the end of the paper tray, as shown below.

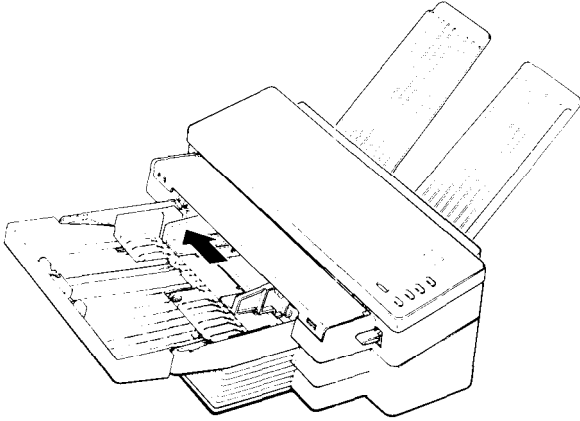


7. If your paper is too long to fit in the paper tray, pull out the extension tray, as shown below.

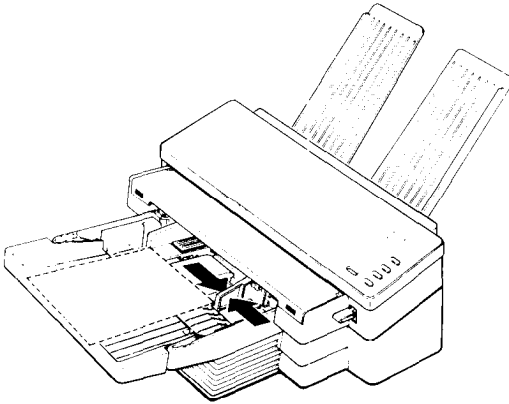


## Loading Paper

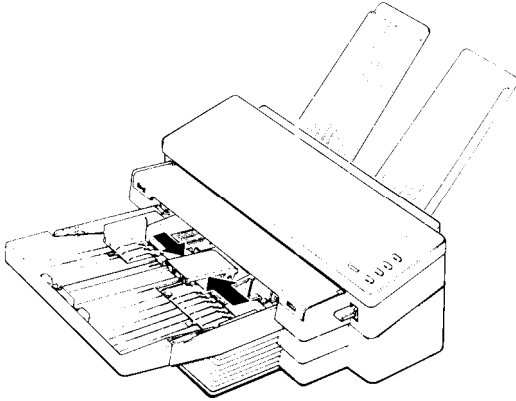
8. Check if the left paper guide is in place on the left side of the paper tray. If the paper guide is not in place, move it until it clicks into place, as shown below.



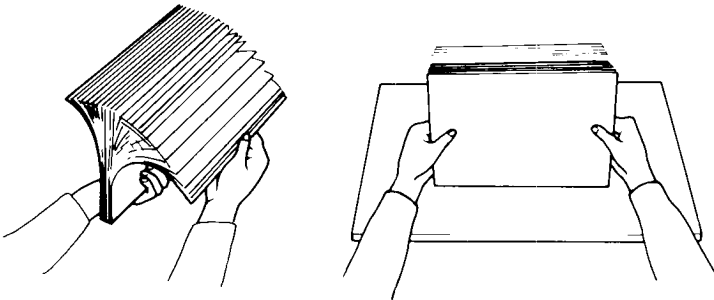
9. Move the right paper guide to roughly match the width of your paper or envelopes.



10. Move the paper support so it is centered between the paper guides.

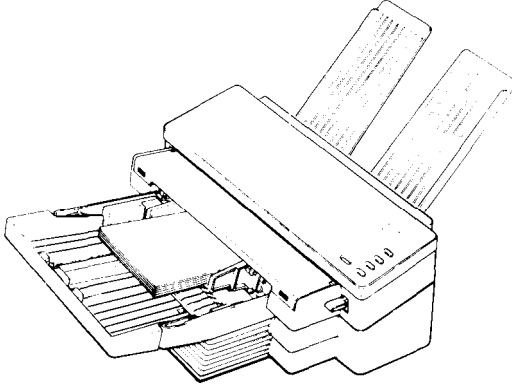


11. Take a stack of paper or envelopes, fan it, and then tap the edges on a flat surface to even up the stack.

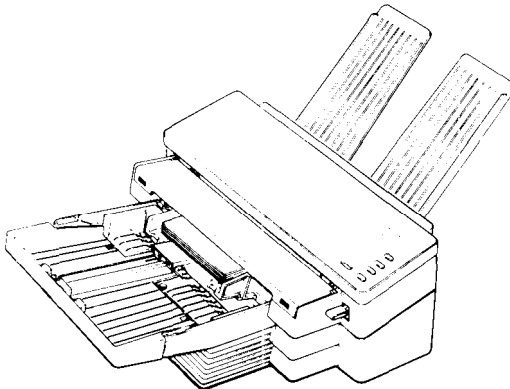


## Loading Paper

12. If you are loading single sheets, insert the stack between the paper guides with the side that provides the best printing quality facing up, as shown below.



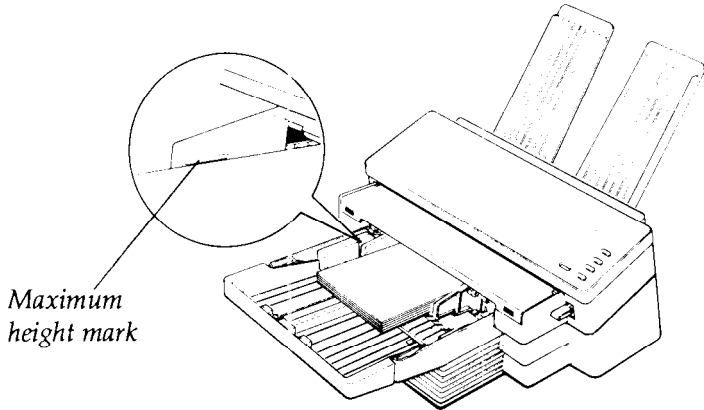
If you are loading envelopes, insert them with the envelope opening entering the printer first and the front of the envelope facing up, as shown below.



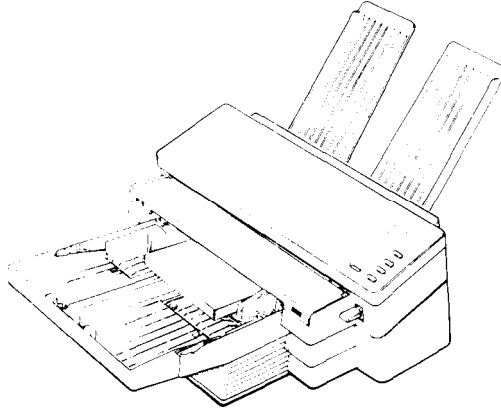




**CAUTION:** The top of the paper or envelope stack must be below the maximum height mark on the left paper guide shown below or a paper jam may result.



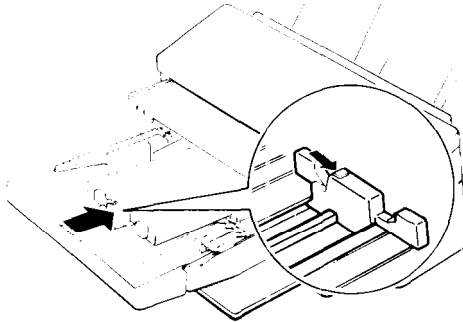
**Note:** You can load letter or A4 size paper in landscape position (with the longer edge of the paper entering the printer first), as shown below.



You may want to load these types of paper in landscape position if you need a wider printing space for spreadsheets, graphics, or tables and the font you are using prints only in portrait orientation. You can load pages of any size in portrait position and print them in landscape orientation using the SelecType printing orientation menu described in Chapter 2.

13. Gently push the stack of paper or envelopes into the printer as far as it goes. Press down lightly on the end of the stack that enters the printer first. Then move the right paper guide so that it rests lightly against the stack.

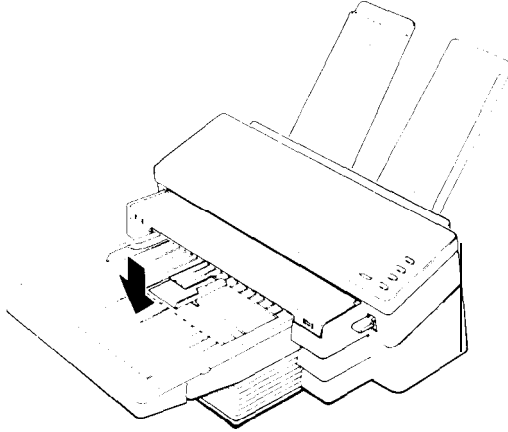
14. If you are loading single sheets, press in the tab on the paper-end clip and move the clip so that it rests lightly against the paper stack, as shown below.



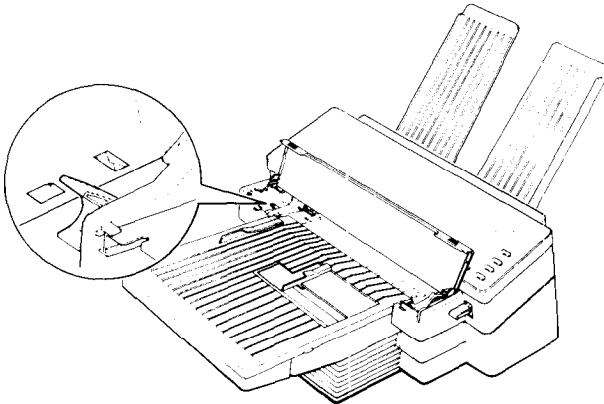
**CAUTION** if are loading single sheets, be sure the paper end clip rests likely against the paper stack or paper feeding problems may result.

## Loading Paper

15. Replace the paper tray cover.



16. Open the paper feeder cover. If you are loading single sheets, move the envelope lever to the single-sheet position, as shown below. To use envelopes, leave the envelope lever in the envelope position. Then close the paper feeder cover.





**CAUTION:** If the envelope lever is in the envelope position when you are using single sheets, the printer does not load paper or print properly.

17. Press **MANUAL FEED** to raise the pressure bar in the paper tray and hold the paper or envelopes securely in place. The **MANUAL FEED** light goes off. Then press **ON LINE** to set the printer on line. The **ON LINE** light goes on.



**CAUTION:**

- When you print documents, periodically remove the printed pages in the output tray. If there are too many pages in the output tray, a paper jam may result.
- When you print graphics on A3 or 11 x 17-inch (ledger or B) size paper, remove each printed page from the output tray before the printer finishes printing the next page.

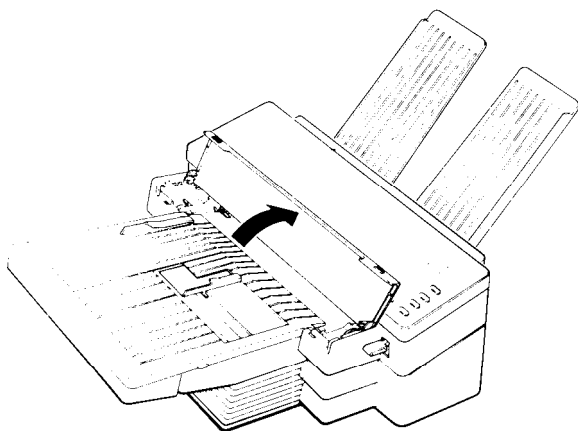
**Note:** If your paper jams when you are printing, see the section on clearing a paper jam in Chapter 6.

## **Loading Paper Manually**

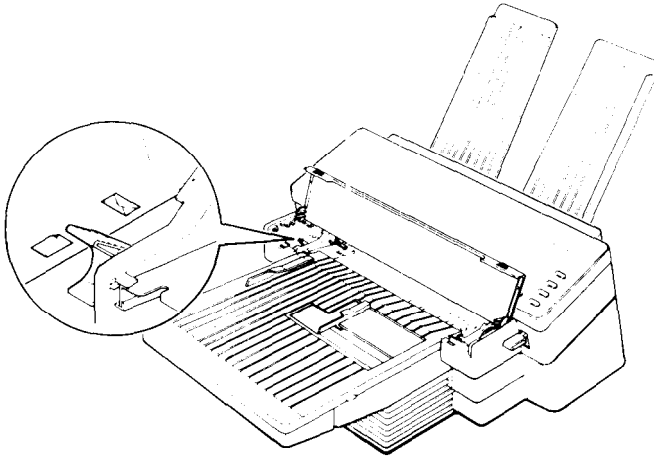
Using the manual loading feature, you can load one sheet of paper or one envelope at a time. This allows you to temporarily use a different type or size of paper without changing the paper in the paper tray.

To manually load a sheet of paper or an envelope, follow these steps:

1. Press ON LINE to set the printer off line. Then press MANUAL FEED to release the paper in the paper tray. The MANUAL FEED light goes on.
2. If you want to use a different paper size, set the paper size using the SelecType paper size menu as described in Chapter 2. If you want to use a different printing orientation, set the orientation using the SelecType printing orientation menu as described in Chapter 2.
3. Open the paper feeder cover, as shown below.



4. If you want to print a single sheet, make sure the envelope lever **is** in the single-sheet position, as shown below. To print an envelope, move the envelope lever to the envelope position.

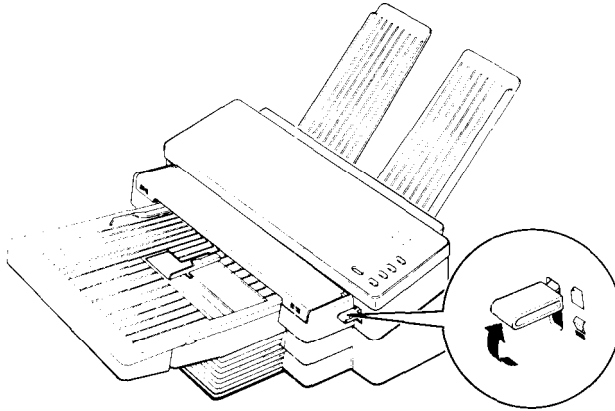


**CAUTION:** If the envelope lever is in the envelope position when you are using single sheets, the printer does not load paper or print properly.

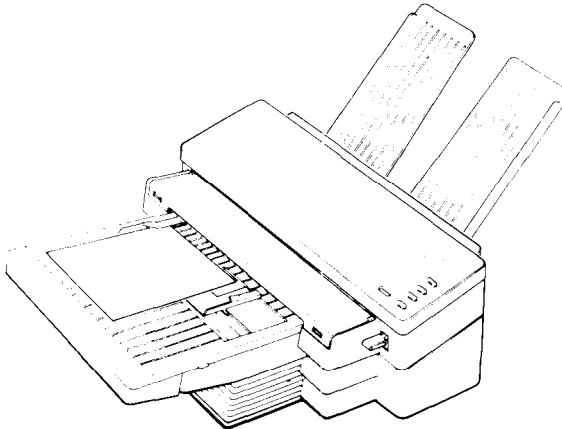
5. Close the paper feeder cover if you want to print a single sheet. To print an envelope, keep the paper feeder cover open.

## Loading Paper

6. Make sure the paper release lever is up, as shown below.

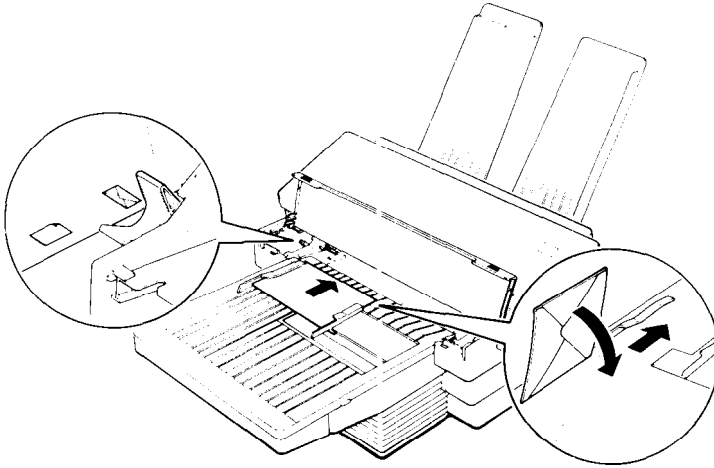


7. To print a single sheet, place the sheet of paper on the paper tray cover with its left edge aligned against the left paper guide on the paper tray cover, as shown below. Make sure the side that provides the best printing quality faces up.

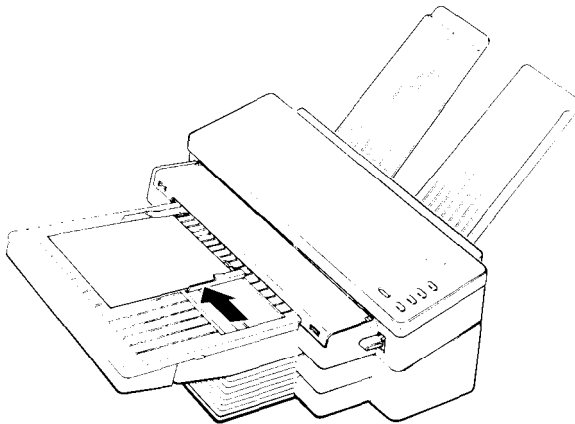




To print an envelope, place it inside the paper feeder with the envelope opening entering the printer first and the front of the envelope facing up. Align its left edge against the envelope guide inside the paper feeder, as shown below.

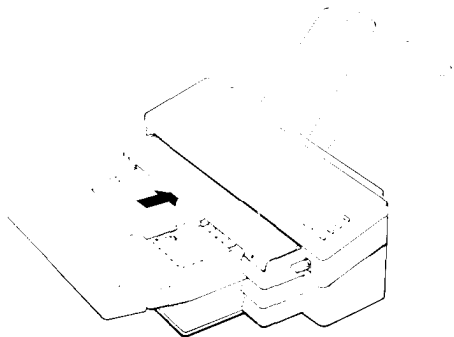


8. If you are loading a sheet of paper, move the right paper guide so that it rests lightly against the right edge of the sheet, as shown below.

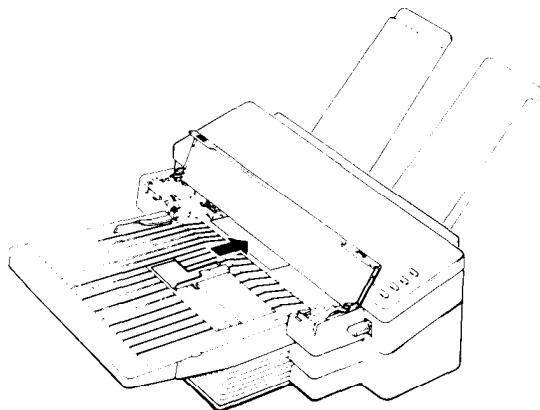


## Loading Paper

9. To print a single sheet, insert it into the manual feeding slot using enough pressure so that the page bows slightly in the middle, until it is drawn into the printer.



To print an envelope, insert it into the paper slot using enough pressure so that the envelope bows slightly in the middle, until it is drawn into the printer. Keep the envelope aligned against the left paper guide.



10. Press ON LINE to set the printer on line. You can now print the page or envelope.

**Note:** When you use the manual loading feature for several sheets of paper or envelopes, be sure the printer is finished printing the previous page and the printed page is in the output tray before you insert the next sheet or envelope.

11. When you are finished using the manual loading feature and you want to use the paper in the paper tray again, press MANUAL FEED. The MANUAL FEED light goes off.

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## Using Font Cards

Font cards allow you to use many different styles of type in addition to the internal fonts resident in your printer. The EPI-4000 has two slots for font cards, and a variety of font cards are available from your Epson dealer.

### Compatible Font Cards

Check with your Epson dealer for a list of the font cards available for the EPI-4000. The manual for each font card contains samples of the characters and symbol sets the font card provides.

Note: You cannot use identity cards #5690 and #5691 with the EPI-4000.
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You can use each font card in only certain printer modes. See the font card manual for information on the printer mode (HP, LQ, or FX emulation) to use. The EPI-4000's default (factory) setting is HP emulation mode. To change the printer mode, use the SelectType printer mode menu described in Chapter 2.

### Caring for Font Cards

When you use font cards, follow these precautions:

- Do not drop, bend, or crush font cards. The card's natural curvature does not affect its operation, so do not try to straighten a card by bending it.
- Avoid touching the small gold connectors (contacts) along the card's edge.
- If the card becomes dirty, clean the connectors by wiping the connector edge with a clean tissue. Do not use water, alcohol, or other solvents to clean the card.

- Keep font cards in their slip cases and blue anti-static bags when you are not using them.
- Do not store cards in direct sunlight or near a source of heat. Font cards can withstand temperatures from -20° F to 150° F (-30° C to 65° C) and can tolerate up to 90% humidity.

### Inserting a Font Card

You can insert a font card into either of the two slots on the left side of the printer toward the front. The top slot is slot A and the bottom slot is slot B. You can insert font cards or identity cards into slot A and only font cards into slot B.



**WARNING:** Be careful when you insert or remove a font card. You can damage the card by trying to insert it the wrong way or by using too much force.

You can insert a font card any time when the printer is off. To insert a font card when the printer is on, follow these steps:

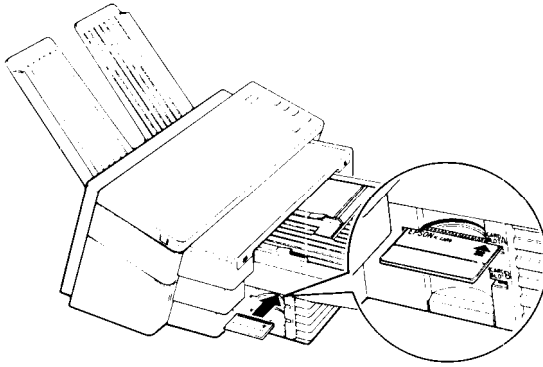
1. Make sure the printer is off line. Also make sure the printer cover is closed. When you close the printer cover, the printer automatically exits SelecType mode.



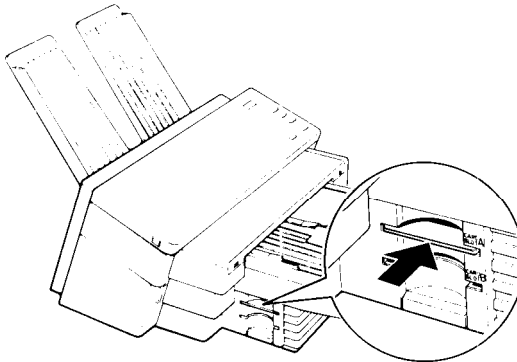
**CAUTION:** Do not insert a font card if the display reads **FF** or *dp*. The *FF* message indicates the printer's memory contains data and the *dp* message indicates the printer's memory is processing data to compose pages. If you see one of these messages, either press ON LINE and then allow the printer to finish printing the document or use your application program to cancel the print job and then press the printer's RESET button. Then return to step 1.

## Using Font Cards

2. Hold the card so that the Epson logo faces up and the arrow points toward the slot you want to use.



3. Make sure the card is level and then slide it into the slot.



If the printer goes off line and the display reads CE, the card error message, you inserted the card when the printer was on line or when the printer's memory contained data. If you see this message, remove the font card. Then press ON LINE and return to step 1.

4. Press ON LINE to set the printer on line.

Now that you have inserted a font card, you can select the fonts you want to print using your application program or SelecType.

### **Selecting a Font With Your Application Program**

When the printer is in HP emulation mode, you can use your application program to select the fonts you want to print. First be sure you selected HP LaserJet series II or a similar printer from the program's setup or installation menu. For more information on printers to choose when you set up your application program, see the section on using your printer with software in Chapter 1.

**Note:** If you plan to use 11 x 17-inch (ledger or B) size paper, select HP LaserJet 2000 when you set up your application program.

After you set up your application program, you can specify the fonts you want using the commands available in the program. See your application program manual for instructions. When you follow these instructions, use your printer as if it were an HP printer.

If your program does not provide commands that allow you to select the font you want, you can select fonts using SelecType menus or printer command sequences. Most application programs, however, allow you to select fonts, and you should not have to use SelecType or printer commands to do so. To select a font using SelecType, see the next section. For information on printer commands, see Appendix B. Also see your software manual for information on how to use printer command sequences.

### **Selecting a Font With SelecType**

If your application program does not allow you to select fonts, you can use SelecType to choose the font you want. When you use SelecType to select fonts, you can select only one font per document.



## Using Font Cards

When the printer is in HP emulation mode, you use the SelecType font source menu to specify the source of the font, whether the font is internal, on a font card, or downloaded from your computer. Then you use the SelecType font number menu to select a font from the font card. The following section describes how to select a font from a font card in HP emulation mode. Chapter 2 also describes how to use the font source and font number menus.

When the printer is in LQ or FX emulation mode, you do not need to specify the font source. To select a font from a font card, you use the SelecType typeface menu as described in Chapter 2. If you are using font card 5430, you can select OCR-A (33) or OCR-B (32) from the LQ-FX typeface menu.

### Selecting a font in HP emulation mode

To select a font from a font card in HP emulation mode, follow these steps:

1. Make sure the printer is off line. Then open the printer cover.
2. Press SelecType to enter SelecType mode. The SelecType light goes on.
3. Press MENU until the left digit on the display is 2. This is the font source menu.
4. To select the font card you want to use, press ◀ or ▶ to change the right digit on the display. Select 1 if the card is in slot A (the top slot) or 2 if it is in slot B (the bottom slot).

**Note:** The EPI-4000 does not let you use SelecType options that are not available on your printer. If you cannot display a 1 or a 2, your font cards are not installed properly or the desired font cannot be used with the current printer mode. See the section on inserting a font card earlier in this chapter.

5. Press SET to save the font source setting.



**CAUTION:** A new setting takes effect only after you press SET to save it, so always be sure to press SET after you change a setting.

6. Next press MENU until the left digit on the display is 3. This is the font number menu.
7. To select the font you want to use, press ◀ or ▶ to change the right digit on the display. Select the number of the font you want to use. Font numbers are listed on the font card.
8. Press SET to save the font number setting.
9. Release the printer cover support and close the printer cover. When you close the printer cover, the printer automatically exits SelecType mode. Then press ON LINE to set the printer on line.

## Removing a Font Card

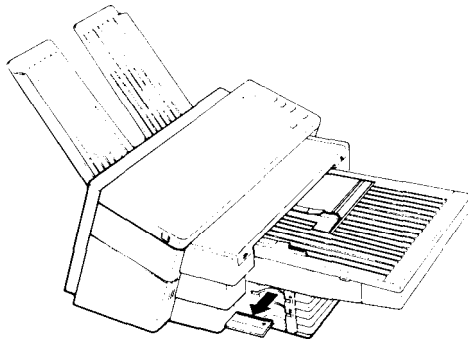
You can remove a font card any time when the printer is off. To remove a font card when the printer is on, follow these steps:

1. Make sure the printer is off line. Also make sure the printer cover is closed. When you close the printer cover, the printer automatically exits SelecType mode.



**CAUTION:** Do not remove a font card when the display reads *FF* or *dP*. The *Ff* message indicates the printer's memory contains data and the *dP* message indicates the printer's memory is processing data to compose pages. If you see one of these messages, either press ON LINE and then allow the printer to finish printing the document or use your application program to cancel the print job and then press the printer's RESET button. Then return to step 1.

2. To remove the font card, grasp the card at the center and gently pull it straight out of the slot, as shown below.



### **Recovering From a Card Error**

If the display reads CE, a card error has occurred. A card error occurs if you insert or remove a font card when the printer is on line or when the printer's memory contains data. You cannot use the font card or print documents until you correct the card error.

### **When inserting a font card**

If a card error occurs when you insert a font card, follow these steps to correct the error:

1. Remove the font card from the slot.
2. Press ON LINE to set the printer on line. The ON LINE light goes on.
3. If the printer's memory contains data, printing resumes. Wait until the printer finishes printing or cancel the print job using your application program and then press the printer's RESET button. If the printer's memory does not contain data, skip this step.
4. Press ON LINE to set the printer off line.

5. To reinsert the font card, see the section on inserting a font card earlier in this chapter.

### **When removing a font card**

If a card error occurs when you remove a font card, follow these steps to correct the error:

1. Reinsert the font card.
2. Press ON LINE to set the printer on line. The ON LINE light goes on.
3. If the printer's memory contains data, printing resumes. Wait until the printer finishes printing or cancel the print job using your application program and then press the printer's RESET button. If the printer's memory does not contain data, skip this step.
4. Press ON LINE to set the printer off line.
5. To remove the font card, see the section on removing a font card earlier in this chapter.

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## Using a Memory Board

If you often print complex pages with graphics and downloaded fonts, you may want to increase the amount of random access memory (RAM) in the printer. Your printer needs more memory if the display frequently reads *bF* or *bo*, the buffer overflow error messages.

To increase the amount of memory in the printer, you can install the optional memory board. The optional memory board provides an additional 2MB of RAM. After you install the memory board, the printer has a total of 2.5MB of RAM.

### Installing a Memory Board

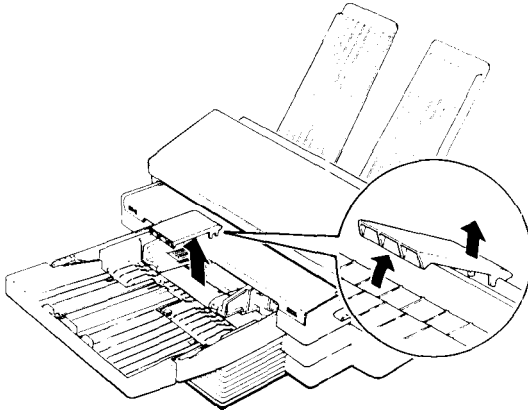
To install the optional memory board, follow the steps below. You need a cross-head screwdriver.



**WARNING:** High voltages are present inside the printer when the power is on. Do not connect the memory board unless the printer is turned off and the power cord is unplugged. Also, try not to touch contacts on circuit boards in the printer because the static electricity from your body can destroy many of the components.

1. Make sure the printer is off line. Then press **MANUAL FEED**. Wait a few seconds while you hear the printer releasing the paper in the paper tray.

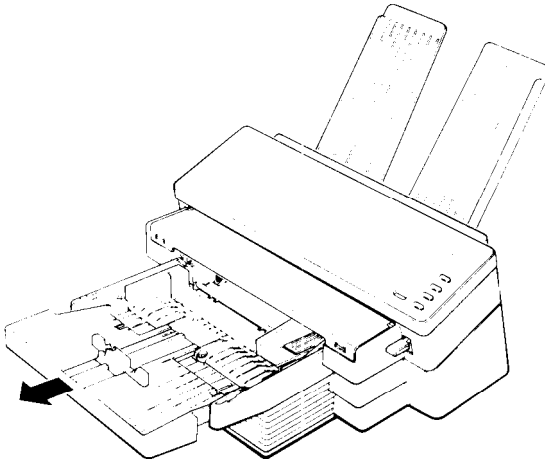
2. Remove the paper tray cover and remove the paper in the paper tray. Then remove the paper support between the two paper guides by first lifting up the end closer to you and then lifting up the other end, as shown below.



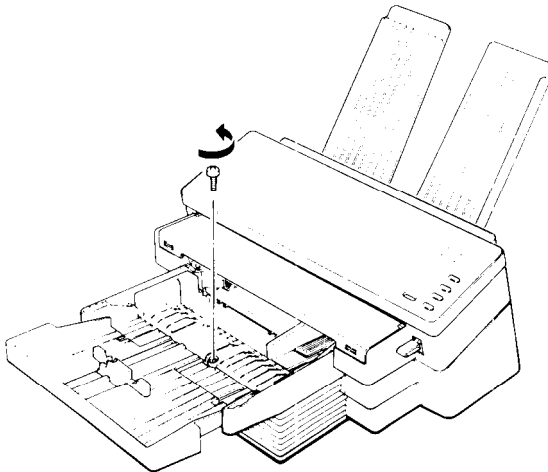
3. Slide the paper guides to the right as far as they go.
4. Turn off the printer and unplug the power cord from the electrical outlet.

## Using a Memory Board

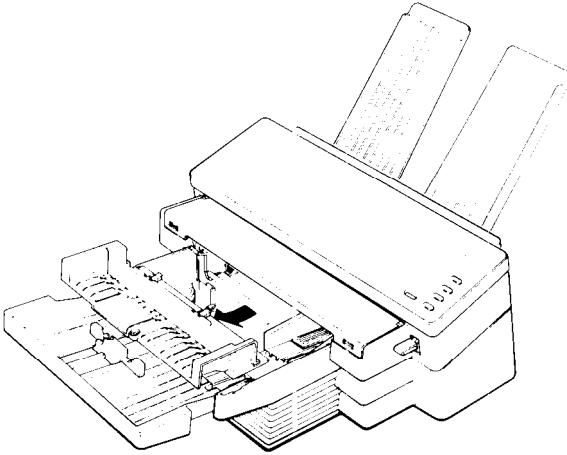
5. Pull out the extension tray to its full length, as shown below.



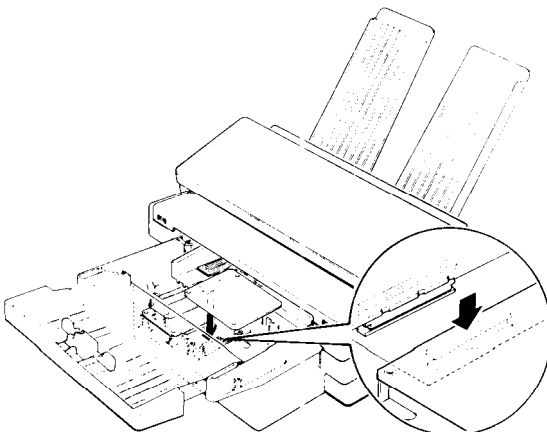
6. Use a cross-head screwdriver to remove the single screw in the middle of the paper tray, as shown below. Keep the screw in a safe place for your later use.



7. The option board cover is part of the paper tray. Lift up the option board cover and slide it out from underneath the paper guides, as shown below. Then remove the option board cover from the printer.



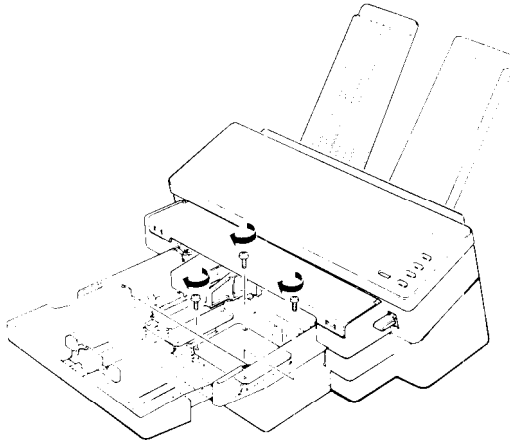
8. To make room for you to insert the memory board, move the paper guides to the left as far as they go. Then hold the memory board as shown below and insert its connector into the connector on the right side of the printer's main control board.



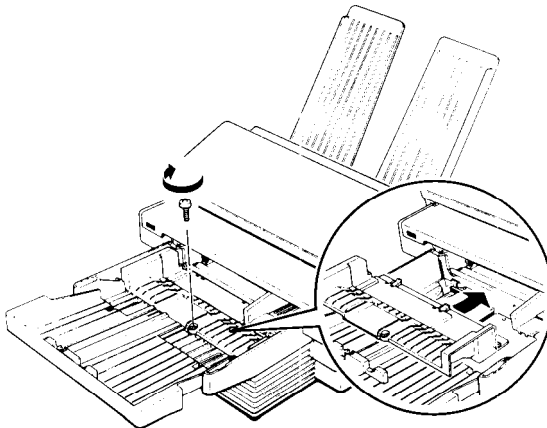


## Using a Memory Board

- Secure the memory board with the three screws that come with the memory board, as shown below.



- Move the paper guides to the right almost as far as they go. (Leave a small gap between the right paper guide and the edge of the paper tray.) Then slide the option board cover underneath the paper guides and fit it back into place. Secure the option board cover with the screw.



11. Slide the extension tray back into place. Then move the left paper guide left until it clicks into place. Replace the paper support and press on the back part of it to secure it to the bar.
12. Load paper, move the right paper guide so that it rests lightly against the paper stack, and replace the paper tray cover.
13. Make sure the printer is turned off. (When the O` on the power switch is visible, the printer is off.) Then plug the power cord back into the electrical outlet.

### **Checking the Memory Board**

After you install the memory board, print a status sheet to see whether the board is properly installed. To print a status sheet, use the SelecType status sheet/self test menu as described in Chapter 2. If the board is installed properly, the printer configuration on the status sheet indicates the printer has 2.5MB of memory.

---

## Using Interface Boards

Epson offers several optional interfaces you can use to supplement your printer's built-in parallel and serial interfaces. The table below lists the interface boards currently available for the EPI-4000. Additional cards may be available later, so you may want to check with your Epson dealer for an updated list.

Interface number	Interface name
#8143	New serial interface
#8148	Intelligent serial interface
#8165	Intelligent IEEE-488 interface
	Coax interface
	Twinax interface

The #8143 and #8148 serial interface boards are required if you need an interface that conforms to the current loop standard instead of RS-232C. These interfaces also provide X-on/X-off data communications protocol and/or loopback self test modes.

The #8165 IEEE-488 interface board provides standardized connections and allows you to connect computers, printers, and other devices to the same line so that they can share data freely.

Coax and Twinax interfaces are also available from Epson dealers. These interfaces allow connectivity to mainframes and minicomputers and emulation of IBM printers.

Note: If you use the Twinax interface, always use your application program to set the page length to match the paper in the printer's self test after you install the Twinax interface, the printer prints each line of the self test on a separate sheet of paper.

If you're not sure whether you need an optional interface, or if you want to know more about optional interfaces, contact your Epson dealer.

### Installing an Interface Board

To install an optional interface board, follow the steps below. You need a cross-head screwdriver.

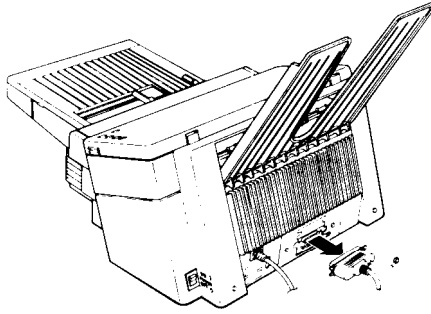


**WARNING:** High voltages are present inside the printer when the power is on. Do not remove the interface tray unless the printer is turned off and the power cord is unplugged. Also, try not to touch contacts on circuit boards in the printer because the static electricity from your body can destroy many of the components.

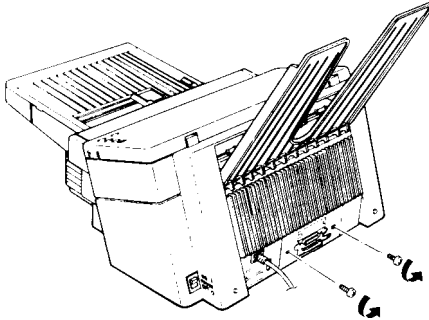
1. Turn off the printer. Then unplug the power cord from the electrical outlet.

## *Using Interface Boards*

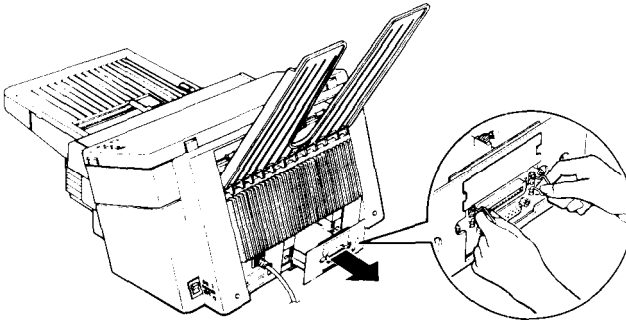
2. Turn the printer around so that the back faces you. Then disconnect all interface cables from the back of the printer.



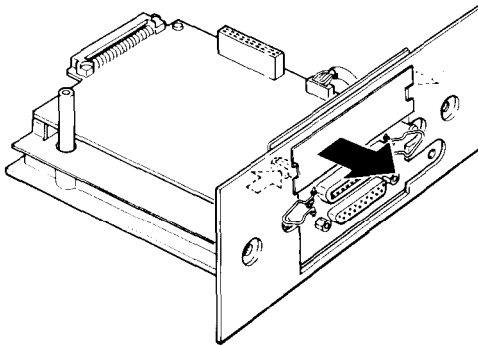
3. Use a cross-head screwdriver to remove the two screws that secure the interface tray, as shown below. Keep the screws in a safe place for your later use.



4. Grasp the clips on the parallel interface and pull the interface tray straight out of the printer, as shown below.



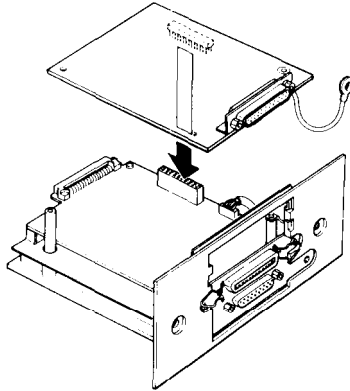
5. Press in the plastic clips on the back of the shield plate and remove the shield plate.



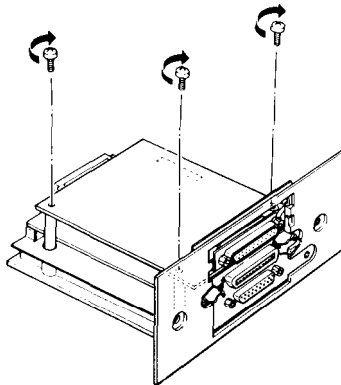
Note: Keep the shield plate and any other loose parts in a safe place in case you want to remove the interface board later.

## Using Interface Boards

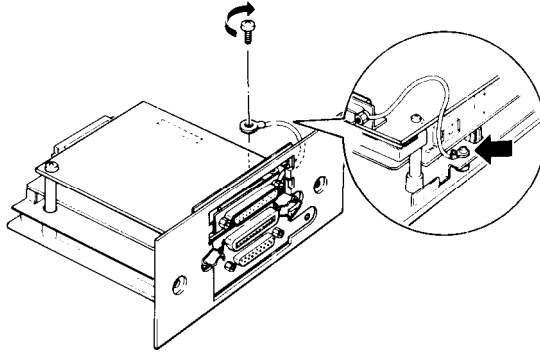
- Carefully insert the connector pins on the bottom of the optional interface board into the mating connector on the built-in interface board, as shown below.



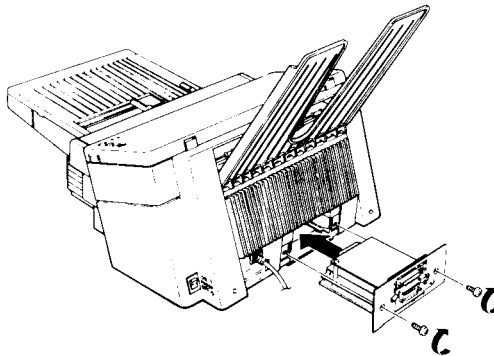
- Secure the optional interface board with the three screws that come with the optional interface board, as shown below.



8. Connect the frame ground (FG) wire with the FG retaining screw. If it is not already attached, connect the other end of the FG wire to the connector on the optional interface board.



9. Set the DIP switches on the optional interface board according to the instructions in the interface board manual.
10. Carefully slide the interface tray back into the printer, as shown below. As you slide the interface tray into the printer, be sure the FG wire does not get caught on or pinched against something. Then replace the two screws.





11. Attach the proper interface cable to the computer and to the optional interface connector. Then turn the printer around.



**CAUTION:** After you install an optional interface board, be sure to disconnect the interface cable from the printer's built-in parallel interface. Two interface cables must not be connected at the same time.

12. Make sure the printer is turned off. Then plug the power cord back into the electrical outlet.

## Setting up Your System

Before you use an optional interface board, you need to set up your printer and computer for use with it.

To set up the printer, select parallel communication using the SelecType interface menu as described in Chapter 2. Even if you installed a serial interface board, you need to select parallel communication because all the optional interface boards use the printer's internal parallel connections.

**Note:** The EPI-4000 is factory set for parallel communication, so you do not need to select parallel communication using the interface menu if you haven't changed the original setting.

It may also be necessary for you to alter the communications protocol of the computer so that it can communicate properly with the printer. In most cases, you should use the information in your optional interface manual or your computer manual to match the computer with the interface.

To use the Coax or Twinax interface, you need to select LQ or FX emulation mode from the SelecType printer mode menu as described in Chapter 2. The printer supports these interfaces only in LQ or FX emulation mode.

# Chapter 5

## Maintenance and Transportation

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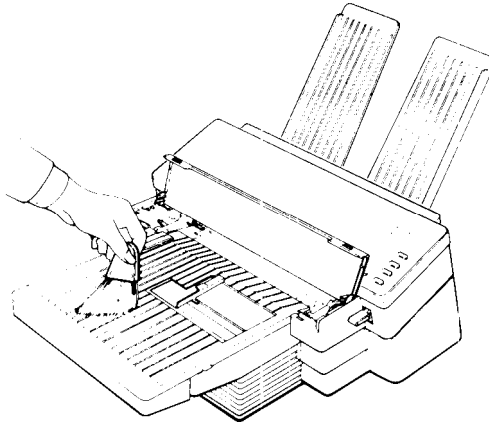
Cleaning the Printer .....	5-2
Cleaning the Print Head .....	5-4
Running the Cleaning Cycle .....	5-5
Cleaning the Paper Path .....	5-6
Replacing the Ink Cartridge.....	5-7
Transporting the Printer.....	5-1 1

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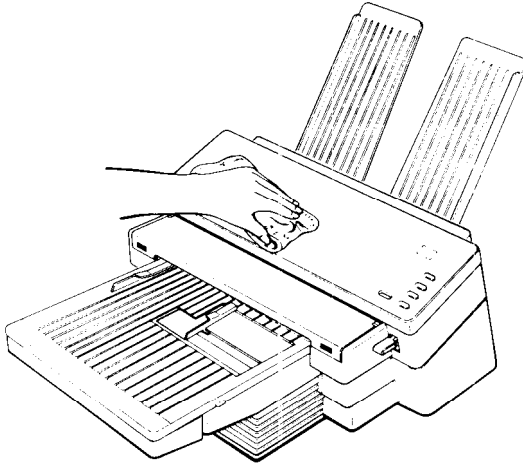
## **Cleaning the Printer**

To keep your printer operating at its best, you should clean it thoroughly several times a year. Follow these steps to clean the printer:

1. Turn off the printer.
2. If you installed the optional push tractor, remove it. See the push tractor manual for instructions.
3. Use a soft brush to carefully wipe away any dust or dirt on the ribbed printer parts.



4. If the outer case or any of the flat covers are dirty or dusty, clean them with a soft, clean cloth dampened with water and a mild detergent. Keep the printer cover closed to prevent water from getting inside the printer.



5. Use a clean cloth to dry the printer, if needed.



**WARNING:**

- Never use alcohol, thinners, or other solvents to clean the printer. These chemicals can damage the components and the case.
- Be careful not to get water on the printer mechanism or electronic components.
- Do not use a hard or abrasive brush.
- Do not spray the inside of the printer with lubricants; the wrong oil can damage the printer mechanism. Contact your Epson dealer if you think the printer needs lubrication.

---

## Cleaning the Print Head

The EPI-4000 offers a print head cleaning cycle to ensure that all the print head's ink nozzles deliver ink correctly. Whenever you turn on the printer, it performs a cleaning cycle automatically. The printer performs another cleaning cycle every 145 hours.

Under ordinary use, the EPI-4000's automatic cleaning cycles keep the print head clean. If, however, you notice that the print quality is declining, you can run the cleaning cycle to clean the print head.

**Note:** Your ink cartridge will run out prematurely if you run the print head cleaning cycle often,



### CAUTION:

- If you have persistent problems with print quality,, make sure you are using the right type of paper for the EPI-4000. See the section on choosing paper in Chapter 3.
- Do not follow the steps in this section to run the cleaning cycle when the display reads *IL*, the ink low message. If you run a cleaning cycle when the display reads *IL*, the display changes to *1E*, the ink end message, and you cannot use the printer until you replace the ink cartridge.

## **Running the Cleaning Cycle**

To run the cleaning cycle, follow these steps:

1. Make sure the printer is off line. If the ON LINE light is on, press ON LINE to set the printer off line.
2. Open the printer cover. Then press SelecType to enter SelecType mode. The SelecType light goes on.
3. Press CLEANING briefly. Then release the printer cover support and close the printer cover. The display reads CL, the print head cleaning message, and the printer runs the cleaning cycle.
4. If print quality problems persist, repeat the previous four steps to run the cleaning cycle again.

**Note:** If there is paper in the paper path when you try to run the cleaning cycle, the printer will not perform the entire cycle (the print head will not move to the right for brush cleaning).

---

## Cleaning the Paper Path

The paper path normally does not require cleaning. Follow the steps in this section to clean the paper path only after a paper jam.



**WARNING:** There are sharp gears around the paper path. Be careful not to touch them when you clean the paper path.

1. Press ON LINE to set the printer off line. Then turn off the printer.
2. Open the printer cover and move the envelope lever to the envelope position.
3. Use the brush that comes with your printer to clean out the paper residue in the paper path. Brush from left to right, sweeping the residue into the opening at the extreme right.

---

## Replacing the Ink Cartridge

When the display reads *IL*, the ink low message, there is enough ink left in the cartridge to print only about 20 letter size pages. When the cartridge is completely out of ink, the display reads *IE*, the ink empty message, and the printer goes off line. Then you cannot set the printer back on line until you replace the ink cartridge.

When the ink low message first appears, make sure you have a new ink cartridge and be ready to replace the old one when it runs out. Always use the Epson S020003 ink cartridge in the EPI-4000. It is the only ink cartridge the EPI-4000 can use. A new ink cartridge contains enough ink to print 1000 average letter-size or A4 pages. (Pages with dense text or graphics use more ink.)



**WARNING:** Please take the following precautions when you handle ink cartridges for the EPI-4000:

- Avoid allowing the ink to contact skin or eyes. If ink gets into your eyes, flush them immediately with water. After you handle an ink cartridge, thoroughly wash any traces of ink from your skin with soap and water.
- Do not take apart ink cartridges.
- Keep ink cartridges out of reach of children.

Follow these steps to replace the ink cartridge:

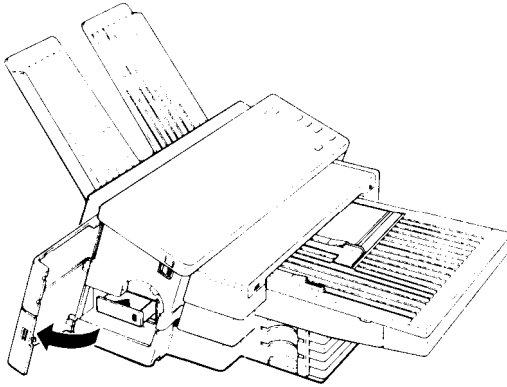
1. Make sure the printer is off line.



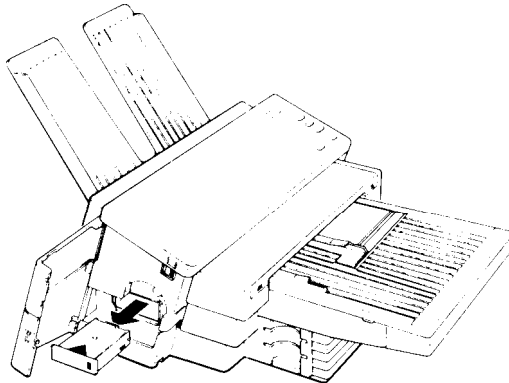
**WARNING;** Never remove or install an ink cartridge when the printer. Before you remove or install an ink cartridge, always set the printer off line so that the print head is capped at the left side of the printer.



2. Open the ink cartridge compartment cover, as shown below.



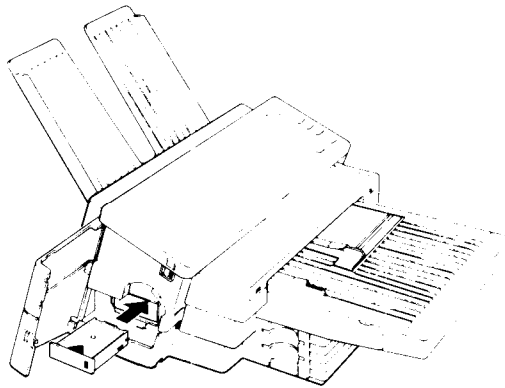
3. Remove the cartridge by pulling it straight out of the printer, as shown below. Dispose of it immediately in a safe place where children or pets cannot touch it. (It cannot be refilled.)



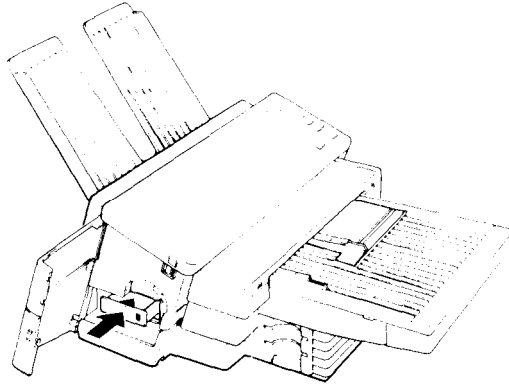
## Replacing the Ink Cartridge

**Note:** The ink indicator lever at the end of the cartridge tells you whether the ink cartridge is full or empty. The lever is up when it is full and down when it is empty. (The letters F and E are embossed on the cartridge case.) Check this lever to avoid confusing the old cartridge with the new one.

4. Hold the new cartridge with the triangle on top of it pointing toward the printer as shown below, and insert it into the compartment.

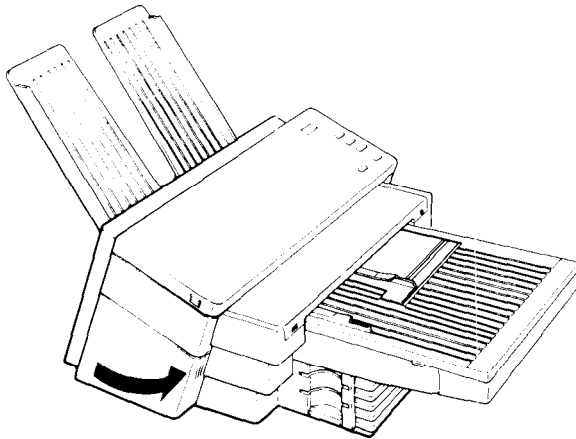


5. Gently push the cartridge into the compartment until you feel it meet the back of the compartment and hear it snap into place.



**Note-** When the ink cartridge is in place, about one inch of it protrudes from the slot.

6. Close the ink cartridge compartment cover.

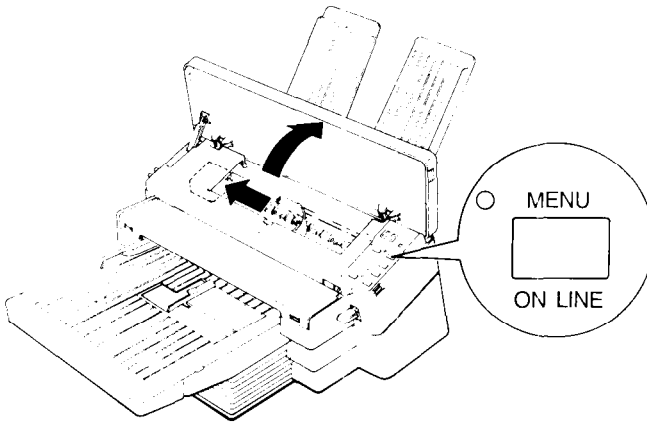


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## Transporting the Printer

If you need to transport the printer some distance, carefully repack it in its original packing materials and box according to the instructions below.

1. Set the printer off line and then open the printer cover so the print head is properly capped.



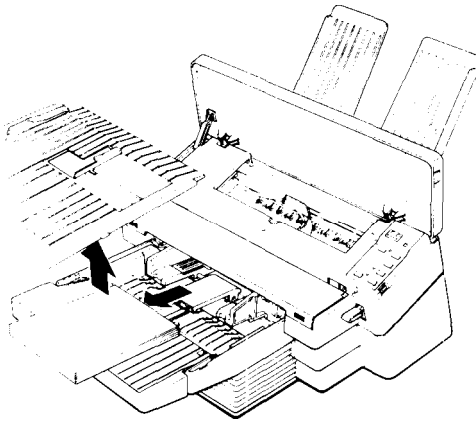
2. Press MANUAL FEED to release the paper in the paper tray.
3. Turn off the printer.



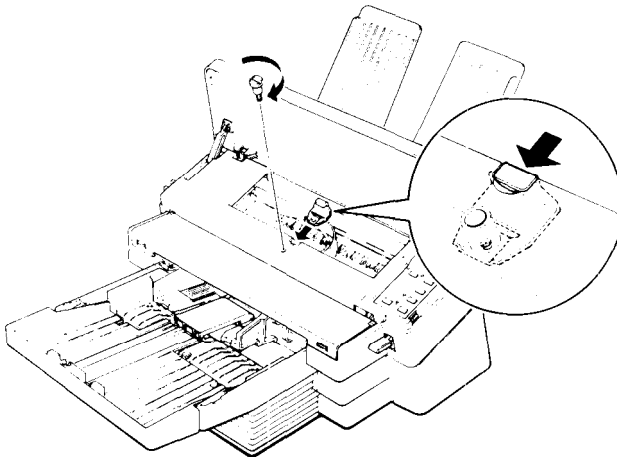
**WARNING:** Always set the printer off line and turn it off before you unplug the power cord from the electrical outlet.

4. Unplug the power cord from the electrical outlet and coil it. Then disconnect the interface cable from the printer and the computer.

5. Remove the paper tray cover and then remove the paper in the paper tray.

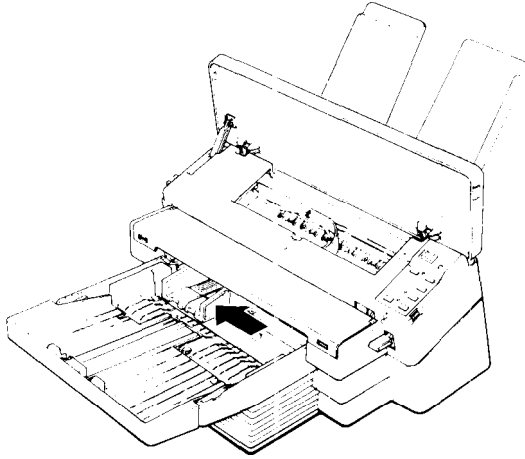


6. Attach the protective bracket with the screw, as shown below.

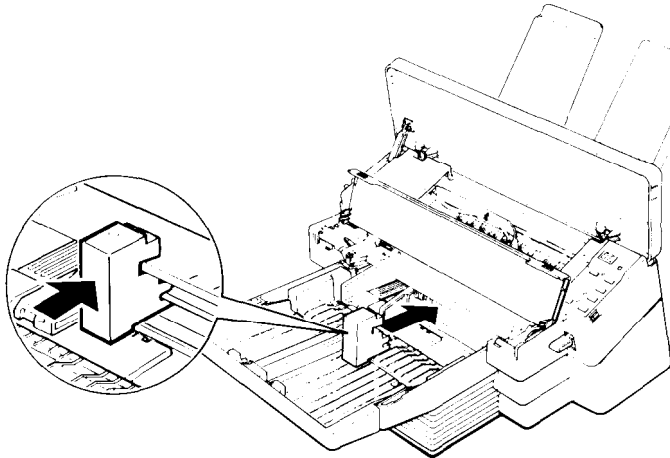


## *Transporting the Printer*

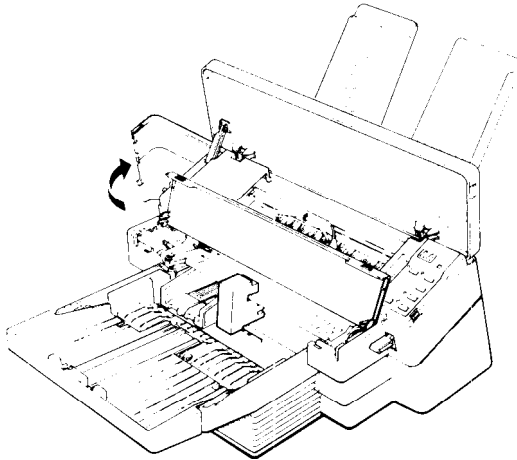
7. Move the paper guides and the center support to the left as far as they can go.



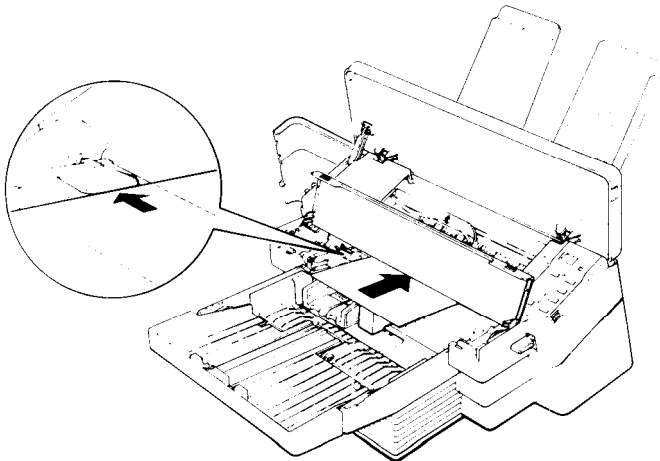
8. Open the paper feeder cover and replace the packing material that you removed when you set up your printer.



9. Open the ink cartridge compartment cover.

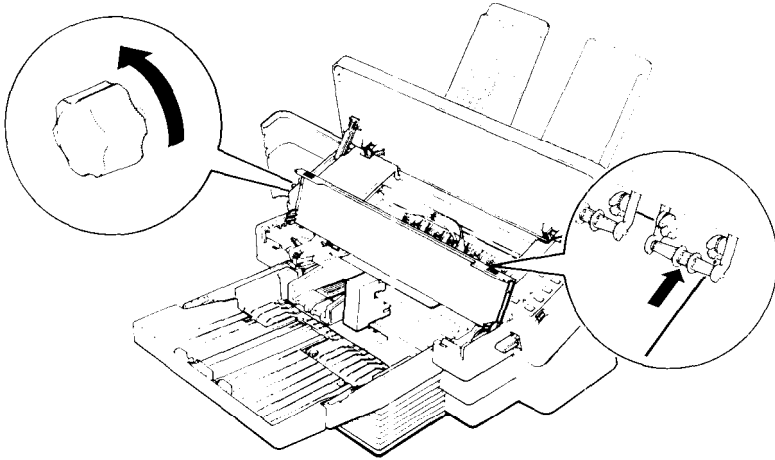


10. Insert the protective sheet into the paper feeder sideways with the edge of the sheet aligned against the envelope guide, as shown below.

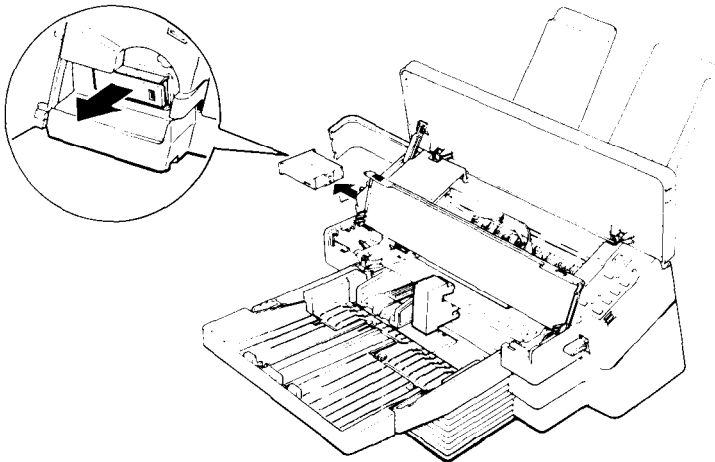


## *Transporting the Printer*

11. Turn the knob underneath the ink cartridge compartment cover counterclockwise until the protective sheet reaches the position shown below.

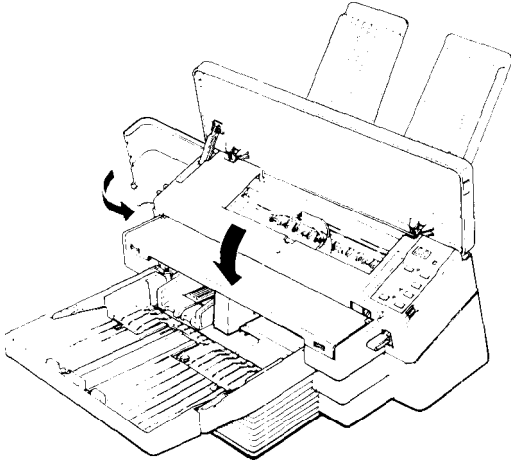


12. Remove the ink cartridge by pulling it straight out of the printer, as shown below.

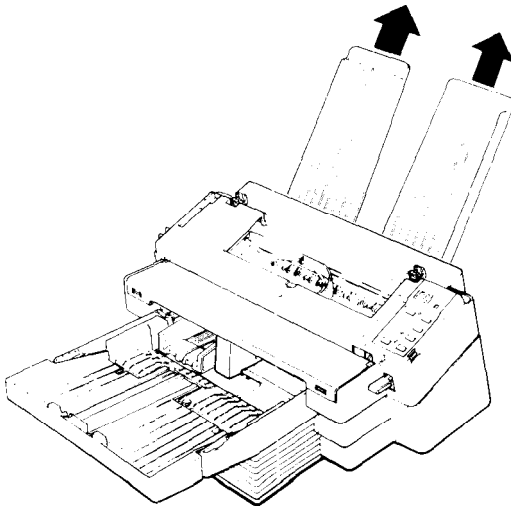




13. Close the printer, paper feeder, and ink cartridge compartment covers.

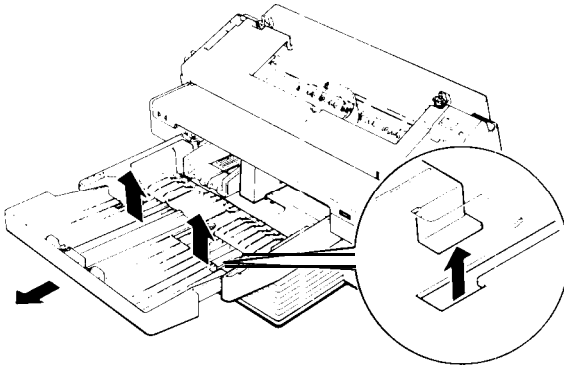


14. Remove the output tray by lifting it up and out of the printer, as shown below.



## *Transporting the Printer*

15. Pull out the extension tray to its full length. Then pull the extension tray toward you and lift it up to remove it from the printer, as shown below.



16. If you installed the optional push tractor, remove it. See the push tractor manual for instructions.
17. Pack the printer and accessories in their original packing materials and boxes. To do so, see the section on unpacking the printer in Chapter 1 and follow the steps in the reverse order.

# Chapter 6

## Troubleshooting



- Status and Error Messages ..... 6-2
  - The Messages ..... 6-2
  
- Problems and Solutions ..... 6-8
  - Power Supply ..... 6-10
  - Paper Feeding Problems ..... 6-11
  - Clearing a Paper Jam ..... 6-13
  - Test Print.. ..... 6-18
  - Printing Problems ..... 6-19
  - Problems With Graphics ..... 6-26
  - SelecType Problems ..... 6-28
  - Paper Handling.. ..... 6-30
  - Options ..... 6-35
  
- Data Dump Mode..... 6-38

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## Status and Error Messages

The control panel gives you two types of information: status messages and error messages. Status messages appear on the display during the normal operation of your printer. They indicate the printer's current status. When an error occurs, an error message appears to tell you what is wrong.

This section lists and describes in alphabetical order possible status and error messages and their meanings. You can correct most problems causing the error messages easily by following the suggestions provided below.

Chapter references are included where necessary to help you find more information about each message.

### The Messages

--

The printer is warming up. Wait until the message clears to print data.

≡ or ≡≡

When you use a software command to set the number of lines per page to a value larger than 99, you can use `SelectType` to display the parameter. The printer displays the value as `≡` or `≡≡`. See Chapter 2 to change the lines per page setting.

#### ***bF* Insufficient memory**

The printer does not have enough memory available to store all the downloadable fonts or macros that were sent to it. Reduce the number of fonts or macros you are using. You can press `ON LINE` to print the current page in the printer's memory, but your printout may be incomplete. If this message appears often, install an optional memory board as described in Chapter 4.

### **bo Buffer overflow**

Text or graphics data fill the printer's buffer and the printer does not have enough memory to store all the page data sent to it. Simplify the page by removing text or graphics, or begin a new page with software commands. If you press ON LINE to resume printing before you simplify the page, your printout may be incomplete. If this message appears often, install an optional memory board as described in Chapter 4.

**Note:** If the SelecType auto continue menu is set to on, the *bo* error may be cleared automatically even though the problem remains.

### **CE Card error**

This message appears for one of two reasons.

1. You inserted a font card when the printer **was** on line or when the printer's memory contained page data. Remove the font (card and press ON LINE to resume printing.
2. You removed a font card when the printer was on line or when the printer's memory contained page data. Insert the font card and press ON LINE to resume printing.

### **CL Cleaning**

The printer is cleaning the print head. See Chapters 1 and 5 for cleaning cycle information.

### **Co Cover open**

The printer cover is open. Release the printer cover support and close the printer cover; then press ON LINE to continue printing.



**CAUTION:** Do not open the printer cover while your print. If you do, the printer stop printing, goes off line, and some part of the page may be faint or may not be printed at all.

### ***dP* Processing data**

The printer is processing data. If you set the printer off line while it is printing, it displays this message. To resume printing, press **ON** or **FORM FEED**. See Chapter 4.

### ***E 0 through E 9* , *EA through EF* Service required**

If one of these error messages appears, write down the message the printer displays and immediately turn off the printer. Turn on the printer after a few seconds to see if the error message still appears. If it does, unplug the power cord from the electrical outlet and contact your Epson dealer. In most cases, these error messages indicate that the printer requires service.

*E9* and *EA* through *EF* are fatal error messages.

### ***F* *FX* emulation mode**

When you select Epson *FX* emulation mode, the printer displays this status message for a short time.

### ***FF* Form feed**

The printer's memory contains page data. Press **FORM FEED** to print the data in the printer's memory.

### ***H* *HP* emulation mode**

When you select HP LaserJet emulation mode, the printer displays this status message for a short time.

### ***H d* Hexadecimal dump mode**

This status menu appears when the printer is set to hexadecimal data dump mode. See Data Dump Mode later in this chapter for information on running a data dump.

### ***Ho* Head hot**

The print head is overheated. The printing speed may slow down, but printing continues. You may also notice a decline in print quality. If this error message occurs often, move the printer to a cooler location.

### ***I C* Ink charging**

This status message appears when the printer is charging the print head with ink.

### ***I E* Ink end**

The ink cartridge is completely empty or no ink cartridge is installed. Replace the ink cartridge as described in Chapter 5 or install an ink cartridge as described in Chapter 1.

### ***I L* Ink low**

The ink cartridge is nearly empty. You can print up to 20 average letter size pages after this message first appears. Then when the *I E* message appears, replace the ink cartridge as described in Chapter 3.

### ***L* LQ emulation mode**

When you select LQ emulation mode, the printer displays this status message for a short time.

**L E Envelope lever error**

The envelope lever is in the envelope position and you are trying to print a single sheet, or the envelope lever is in the single-sheet position and you are trying to print an envelope. Move the lever to the correct position for your printing task and press ON LINE to resume printing. This error only occurs when the SelecType paper size menu is set for single sheets. See Chapter 3 for printing information.

**L r Paper release lever error**

This error occurs if the lever is in the lower position when you try to print single sheets or envelopes. Move the lever to the upper position and press ON LINE to resume printing. This error only occurs when the SelecType paper size menu is set for single sheets.

This error also occurs when you use the optional push tractor unit if the lever is in the upper position and you try to print on continuous paper. Move the lever to the lower position and press ON LINE to resume printing.

**P E Paper out**

This error message appears when the paper tray is out of paper, or manual feed mode is on and you are not feeding pages correctly from the paper tray cover. Load paper into the paper tray as described in Chapter 1, or manually feed a sheet of paper into the printer as described in Chapter 3. Press ON LINE to resume printing.

**P J Paper jam error**

Paper is jammed inside the printer. Follow the instructions on page 6-13 to remove the jammed paper. Then close the printer cover and press ON LINE to resume printing.



### ***P S* Paper size error**

The SelecType paper size setting does not match the actual paper loaded in the printer. Press **MANUAL FEED** to eject any paper in the paper path. Load the correct size paper or stop the data from the computer and reset the printer to the correct SelecType paper size setting. You can also press **ON LINE** to resume printing on the currently loaded paper. If you do this, however, some data may be lost. See Chapter 2 to change the paper size setting.

**Note:** If the SelecType auto continue menu is set to on, the *PS* error may be cleared automatically even though the problem remains. In most instances, leave the auto continue menu set to on.

### ***r E* Reset**

This status message appears briefly when you press **RESET**. The printer erases any settings you made with software commands and reverts to the most recent SelecType settings.

### ***r F* Factory reset**

This status message appears briefly when you hold down the **RESET** button for five seconds or longer. The printer resets all SelecType settings to their factory defaults. See Chapter 2 for a list of SelecType menus and their default settings.

### ***S P* Self print**

When you print the status sheet or the self test, this status message appears.

---

## Problems and Solutions

This section includes common problems you may encounter while using the printer and their likely solutions. Use the guide below to locate the printing problem you are experiencing. If you cannot find the exact problem, look for a similar problem.

**Problem** **See page**

### Power Supply

- Power is not being supplied to the printer. **6-10**
- Unusual smell occurs when you turn on the power. **6-10**

### Paper Feeding Problems

- Feed error. 6-11
- Paper jam. 6-13

### Test Print

- The test print does not run. 6-18

### Printing Problems

- The printer does not print or stops printing. 6-19
- Printout is faint or uneven. 6-20
- Printout is not what you expected. 6-22
- All output is garbled or printed as asterisks. 6-23
- The position of the printout is not what you expected. 6-25

### Graphics

- Screen graphics are not printed. 6-26

### **SelectType Problems**

- SelectType does not function as expected. 6-28

### **Paper Handling**

- The printer does not feed single sheets properly. 6-30
- The printer does not feed envelopes properly. 6-30
- The printer feeds the paper crookedly or causes the paper to jam. 6-31
- The printer prints a page and then stops. 6-32

### **Options**

- When using optional font cards, the printer does not operate as expected. 6-35
- When using an optional interface, the printer does not operate as expected. 6-36
- After you install the optional memory board, the printer does not function as expected. 6-37

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## Power Supply

### Problem

### Solution

---

**Power is not being supplied to the printer.**

*The POWER light does not go on.*

The power cable may be disconnected or may not be completely plugged into the electrical outlet. Turn off the printer and check the power cable connections between the printer and the electrical outlet; then turn the printer back on.

The power switch may be off. Turn on the power switch.

The problem may lie with the electrical outlet itself. Make sure that the outlet is not controlled by an outside source such as a wall switch. If the printer still does not operate, it is possible that the outlet is faulty. Connect another electrical device to the outlet to check whether the outlet is operating properly.

*When you turn the power on, the printer emits an unusual smell.*

If you have not used the printer for some time, an unusual smell is normal and no cause for concern. Check the date on the ink cartridge to make sure the ink is not past the recommended shelf life.

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## Paper Feeding Problems

**Note:** If you are using the optional push tractor and cannot find a suitable correction in this section, see the manual included with the push tractor.

---

### Problem

### Solution

---

#### **The printer does not feed the paper.**

*The display reads PE,*

There is no paper in the paper tray or you did not load a sheet using the manual feeding feature. Press MANUAL FEED. Now load a stack of paper in the paper tray or insert a sheet manually from the paper tray cover. See Chapter 3 for paper loading instructions.

#### **The printer feeds the paper but does not print.**

*The display reads PS ,*

The actual paper size does not match the SelecType paper size setting or the software commands. Press MANUAL FEED to eject any paper in the paper path and load the correct size paper. Or, press ON LINE to print on the currently loaded paper. In this case, some data may not be printed if the actual paper size is smaller than that set by SelecType or the software command. See Chapter 2 to change SelecType settings.

## Problem

## Solution

---

**The printer feeds the paper but does not print (continued).**

*The display reads PS (continued).*

The paper is loaded crookedly. Press MANUAL FEED to eject the paper in the paper path and be sure to load the correct size paper. Do not reload any wrinkled paper.

- - -

If you set the SelecType auto continue menu to on, the printer begins printing on the loaded paper one second after the *PS* error message appears.

*The display reads PJ.*

The printer is not feeding paper into the printer or has jammed the paper in transit. Remove the jammed paper according to the steps in the next section.

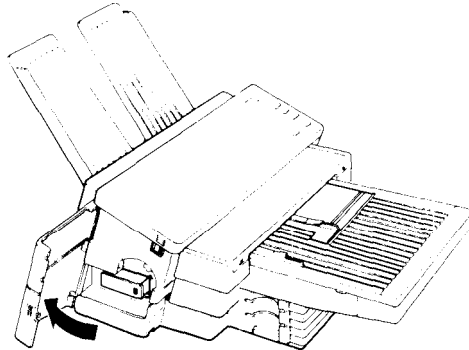
---

---

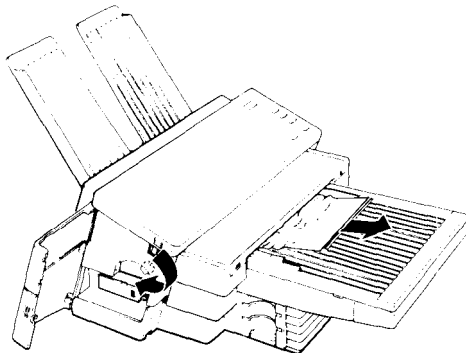
## Clearing a Paper Jam

When the printer does not feed paper into the printer or causes it to jam in the paper path, follow these steps to remove the jammed paper:

1. Open the ink compartment cover.



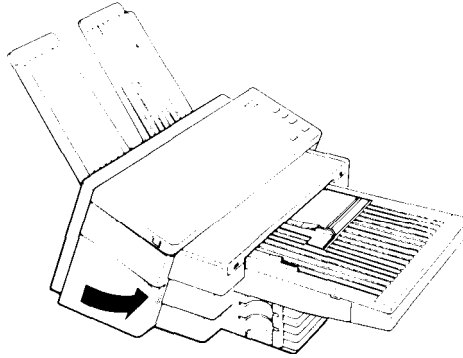
2. Turn the knob clockwise to back the jammed paper out the front of the printer.



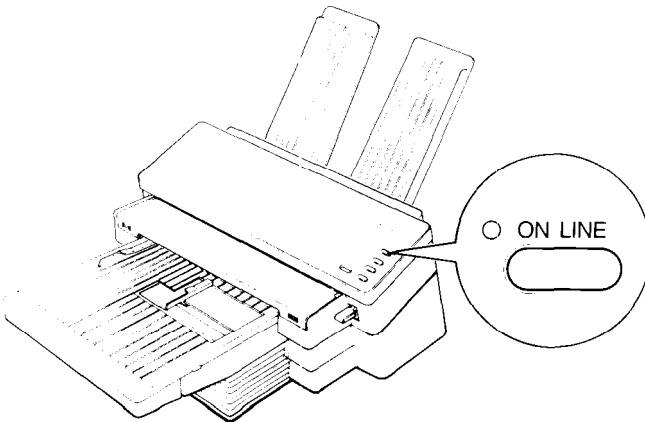
## Clearing a Paper Jam

**Note:** If you cannot remove the jammed paper by turning the knob, you must remove it from the top of the printer. Close the ink cartridge compartment cover and follow the steps in the next section to remove the jam.

3. Close the ink cartridge compartment cover.



4. Press ON LINE to resume printing. The printer begins to print from the top of the page that jammed



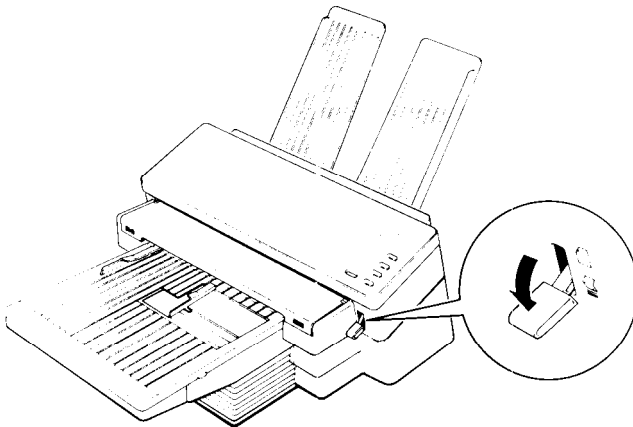


Note: Sometimes ink can smear on the platen during a paper jam. As a result, the backs next few pages may be soiled. If this happens, clean the paper path as described in Chapter 5.

## Removing a Paper Jam from the Top of the Printer

If you cannot remove the jammed paper by turning the knob, follow these steps to clear the paper jam:

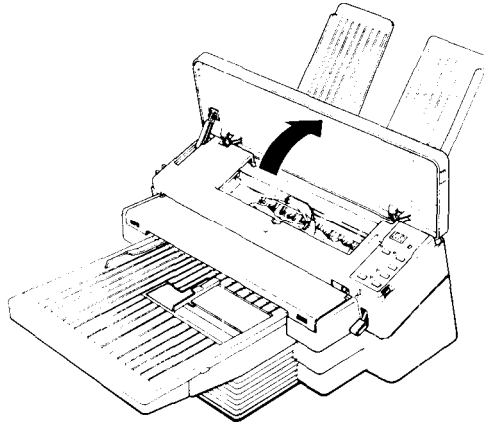
1. If you are printing single sheets, move the paper release lever down to the continuous paper position.



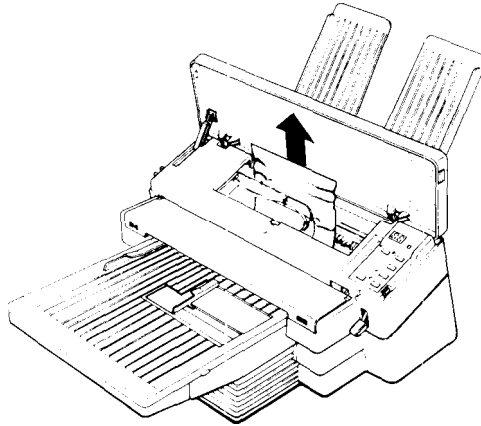
**Note:** If you are using continuous paper, unload the paper before you clear the paper jam. then reload the continuous paper when the jam is cleared:

## *Clearing a Paper Jam*

2. Open the printer cover.



3. Remove the jammed paper from the top of the printer.

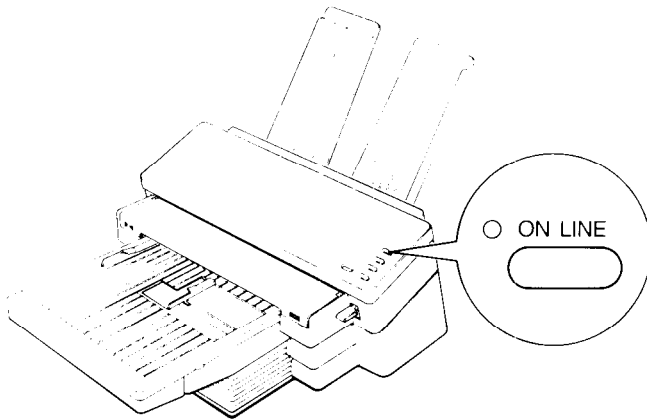




**WARNING:**

- Do not use force to pull out jammed paper; you could cause serious damage to the printer. If you cannot remove jammed paper entirely and the printer will not print, contact your Epson dealer for assistance.
- Avoid touching any of the sharp gears surrounding the paper path system when you remove jammed paper.

4. If you are printing single sheets or envelopes, move the lever back up to the single-sheet position.
5. Press ON LINE to set the printer on line. The printer begins to print from the top of the page that jammed.



---

## Test Print

### Problem

**The self test or status sheet does not print.**

*The printer does not feed paper at all.*

### Solution

If the display reads *PE*, make sure you have loaded paper in the paper tray,

If the display reads *PS*, you may not have set the correct paper size. Make sure that the size of paper you load in the paper tray or insert manually from the paper tray cover matches the paper size you have set with SelecType. See Chapter 2 to change SelecType settings.

After choosing self test or status sheet from the SelecType test print menu, you may not have pressed SET long enough to start the test print. Push SET again; this time, hold the button down until the display reads *SP*.

If the printer still does not produce the self test or status sheet, contact your Epson dealer for assistance.

---

---

## Printing Problems

### Problem

### Solution

---

**The printer does not print or stops printing.**

*The ON LINE light is on but the printer doesn't print anything.*

The interface cable may not be plugged in securely. Check both ends of the cable. If you are using a parallel interface, secure the connector using the wire retaining clips.

The software may not be installed properly for your printer. Use the program's setup or install procedure to check the printer settings and make any necessary changes. Make sure the printer emulation mode you select (HP LaserJet, FX, or LQ) matches your program's printer driver.

You may not be using the correct interface cable. Make sure that your interface cable meets both the printer and computer specifications. See Chapter 7 and your computer manual.

You may not have selected the correct interface with SelecType. Make sure that the interface setting in SelecType matches your interface. Also, check to see that the interface is configured correctly for use with your computer. See Chapter 1 and 2.

## Problem

## Solution

### **The printer does not print or stops printing (continued).**

*The ON LINE light is off.*

The printer may be off line and cannot receive data. Press ON LINE to set the printer on line (the ON LINE light goes on>.

### **Print is faint or uneven.**

*Dots are missing in printed characters or graphics.*

The print head nozzles may be clogged. Press ON LINE to set the printer off line and open the printer cover. Then press SelecType to enter the SelecType mode. After characters appear on the display, press CLEANING once. The printer starts the print head cleaning cycle (the display reads CL). When the cycle is complete, the printer goes off line automatically. Close the printer cover and press ON LINE to resume printing.

If the problem persists, try printing in unidirectional mode. With the printer off line, press DRAFT for more than three seconds to enter unidirectional mode; then press ON LINE to resume printing.

*Dots are missing in the printed characters or graphics even after you perform the cleaning cycle several times.*

The print head may be damaged. Contact your Epson dealer for assistance.

**Problem**

**Solution**

**Print is faint or uneven (continued).**

Printing on *envelopes* is either faint or too dark.

*The characters are blurred.*

The envelope lever is in the wrong position. When you print on envelopes, move the envelope lever to the envelope position.

The envelope is too thin or too thick. Use only envelopes that fall within the range specified in Chapter 7.

You may not be using the correct type of paper. Make sure the surface of your paper is not too rough or too smooth. Although most types of business correspondence quality paper work well with your printer, always test the paper you want to use before buying it in large quantities.

You may not be printing on the correct side of your paper. Test the other side to determine which side gives the best quality.

The paper is oily, dirty, or wrinkled. Use only clean, new paper.

## Problem

## Solution

---

**The printout is not what you expected.**

*The printer does not produce the font you selected with your software.*

*The printer prints characters that do not belong to the selected symbol set.*

*The printer prints a series of strange characters.*

You may not have selected the correct orientation (portrait or landscape). Make sure that the orientation matches the selected font. The printer ignores the font selection if the font you choose does not support the selected orientation. Also make sure that the SelecType font menu is set to the desired font number.

You may not have selected the correct symbol set. Specify the desired symbol set with your software or with SelecType. If you cannot change the settings with your software, use SelecType to choose the desired symbol set. The procedure to change the symbol set menu with SelecType varies depending on your selected printer mode. See Chapter 2 for more information.

Your printer and computer may not be communicating correctly. Make sure that you use the correct interface cable and that the communication protocol is correct. See your computer manual for more information. You can also use your printer's data dump mode, as described later in this chapter, to print out codes reaching the printer and check the data being sent from the computer.



**Problem**

**Solution**

**The printout is not what you expected (continued).**

*The printer prints a series of strange characters (continued).*

*The printer prints all text on the same line.*

*Text lines are printed with an extra blank line between each line.*

*Every other line of text is printed backwards.*

*All of the output is garbled or printed as asterisks.*

The printer mode setting is not correct. Make sure that the printer setting in your software matches the printer mode you set with SelecType. See Chapter 1.

A line feed command is not being sent at the end of each line of text. Set the SelecType auto menu to on. See Chapter 2 to change SelecType settings.

An extra line feed signal is probably being sent. Set the SelecType auto line feed menu to off. See Chapter 2 to change SelecType settings.

This may happen if you use a word processing program originally set up for use with a daisy wheel printer. In this case, the program sends every other line backwards to compensate for the reverse movement of the daisy wheel print mechanism. See your software manual for information on how to adjust your application program.

The interface connector may not be plugged in completely. Make sure both ends of the interface cable are plugged in securely.

**Problem**

**Solution**

**The printout is not what you expected (continued).**

*All of the output is garbled or printed as asterisks (continued).*

*Characters are smaller than expected when printed in the LQ or FX emulation mode.*

The interface may not be configured correctly. If you use a **serial** interface, make sure that both the computer and printer are set to use the same number of data bits per word and that they both use the same parity, baud rate, and number of stop bits.

You can also use the data dump mode to check the data being sent from the computer, as described later in this chapter.

The printer mechanism may be faulty. Try running a test print as described in Chapter 1. If it is not printed correctly, contact your Epson dealer for assistance.

The condensed mode may be selected. If your application program can send control codes, cancel the condensed mode by sending the DC2 code to the printer. Also, you can set the SelecType condensed mode menu to off, as described in Chapter 2 to change SelecType settings.

## Problem

**The position of the printout is not what you expected.**

*The printed page length differs from the actual length of the paper.*

*The right or left margin setting does not match the actual width of the paper.*

*Line spacing is incorrect.*

## Solution

Your software may be overriding your page length settings. Check that the page length setting in your application program is set correctly for the selected page length. You can also change the page length with SelecType if you are using LQ or FX emulation mode. See Chapter 2 to change SelecType settings.

The margin settings of your application program may be incorrect. Change the application program margin settings.

Your software may be set up incorrectly. Check the printer setting in the software and the printer mode setting of your printer.

**Note:** Experienced printer users can use the data dump mode, as described later in this chapter, to check the data being sent from the computer to your printer. In data dump mode, data is printed in hexadecimal notation and in ASCII characters.

---

## Problems With Graphics

<b>Problem</b>	<b>Solution</b>
<p><b>The printer does not print screen graphics.</b></p> <p><i>After you change the printer mode, you cannot print graphics.</i></p> <p><i>You cannot print graphics using the RS-232C serial interface.</i></p> <p><i>The printer does not print graphics and the display reads bo,</i></p>	<p>You may not have installed the correct printer driver. If you try to print with an application program set for another printer, the printer does not print anything. Make sure that the driver matches the currently selected operating mode. For example, if you set up your software to support HP emulation mode and then change the printer mode with SelecType, you will probably not be able to print graphics.</p> <p>The SelecType word length menu may not be set correctly. When you print graphics, make sure that you set an 8-bit data word. See Chapter 2 to change SelecType settings.</p> <p>Your printer may not have enough memory installed. Simplify the page by removing text or choosing simpler graphics, or install additional memory as described in Chapter 4. If you press ON LINE to resume printing before you simplify your page or add memory, your printout may be incomplete.</p>

**Problem**

**Solution**

**The printer does not print screen graphics.**

*The message bF appears and the printer does not print graphics.*

The printer does not have enough memory to store all the downloaded fonts and macros sent by your software for the page. Simplify the page you are trying to print by reducing the number of fonts or macros, or add more memory to the printer as described in Chapter 4. You can press ON LINE to print the current page; however, your printout may be incomplete.

---

## SelecType Problems

### Problem

### Solution

---

**SelecType does not function as expected.**

*The printer ignores settings made with SelecType.*

*Desired SelecType settings do not appear on the display.*

The software may be either changing the settings on the printer or initializing the printer. This may require that you change the initialization sequence sent by your software. See your software manual for more information.

You may not have saved your settings before turning off or resetting the printer. If you do not press SET to save your changes to SelecType settings, the printer reverts to its previous SelecType settings when you turn off or reset the printer.

You may be trying to select a setting that is not available in the currently selected printer mode. Not all menus are the same in all printer modes. For example, some font sources you can select in HP emulation mode are not available in LQ emulation mode.

## Problem

## Solution

---

**SelecType does not function as expected (continued).**

*After changing printer modes, you find that your previous SelecType settings for that mode have changed.*

It is not possible to set up different SelecType configurations for a number of printer modes because SelecType settings are not specific to a particular printer mode. For example, if you change the interface menu from parallel to serial in one mode and save it, the change applies to all printer modes.

---

## Paper Handling

### Problem

**The printer does not feed paper properly.**

*The printer does not feed paper at all.*

### Solution

Paper may not be loaded or may be loaded incorrectly. Make sure that the paper release lever is up and that paper is loaded. See Chapter 3.

You may not have set the paper end clip correctly. Make sure that the paper end clip rests gently against the edge of the paper stack in the paper tray. See Chapter 3.

The envelope lever may not be set correctly. When you print envelopes, move the lever up until it locks into position.

The left and right paper guides may be placed too closely together and prevent the printer from feeding paper smoothly. Adjust the paper guides so that the paper moves freely along the guides. See Chapter 3.



**Problem****Solution**

**The printer does not feed paper properly (continued).**

*The ON LINE light is off.*

**The printer feeds the paper crookedly or causes the paper to jam.**

*Paper is fed crookedly into the printer.*

*The paper stops feeding and PJ appears on the display.*

# ON LINE

The printer may be off line. Press to set the printer on line.

The edge guides may not be set correctly. Adjust the guides so that the paper slides freely in and out. If the edge guides are too tight they cause the paper to bind; if they are too loose, the paper may go into the printer crookedly.

Paper is jammed in the printer. Follow the instructions earlier in this chapter to remove the paper jam.

The paper may be positioned too far to the right. If this is the case, the printer cannot sense the paper width or paper end, and you may lose some data when you print. Move the paper to the left paper guide.

You may need to clean the paper path as described in Chapter 5.

## Problem

## Solution

**The printer feeds the paper crookedly or causes the paper to jam (continued).**

*The printer feeds two or more sheets at the same time.*

*The printer feeds the paper but then causes it to jam at the output area.*

**The printer prints a page and then stops.**

*The display reads PS.*

You may have loaded too many sheets of paper in the paper tray. The tray holds a maximum of 150 sheets of average paper. Remove any excess sheets.

The stack of paper may not have been fanned sufficiently. Before you load a stack of paper, be sure to fan it first and align the edges of the stack.

There may be too much paper in the output tray. Never let more than 30 sheets of paper accumulate in this tray.

You may be using a non-standard paper size (a size that cannot be selected with the SelecType paper size menu>. You may be able to feed the paper by pressing ON LINE; however, the printout may be incomplete if the actual paper size is smaller than the SelecType paper size setting.

**Problem****Solution**

**The printer prints a page and then stops (continued).**

*The display reads PS (continued).*

The paper size currently set in SelecType may not match your paper size. If you want to print on the paper anyway, press ON LINE. Your printer starts printing; however, the printout may be incomplete if the actual paper size is smaller than the SelecType paper size setting. To set the correct paper size before you print again, follow the steps below:

1. Press MANUAL FEED to feed the paper; then press ON LINE to set the printer off line. If the *dP* (data processing) message appears, press RESET until the display reads *rE*; then press ON LINE.
2. Press MANUAL FEED to release the paper. Then change the paper in the paper tray to the size matching the paper size set in SelecType.

If you would like to use the paper already in the paper tray, you need to change the SelecType paper size setting. Press SelecType to enter SelecType. Then choose the correct paper size setting and press SET to save your new setting. See Chapter 2 to change SelecType settings.

## Problem

## Solution

**The printer prints a page and then stops (continued).**

*The display reads PS (continued).*

*You try to insert a single sheet manually, but the sheet does not go in properly.*

If the SelecType auto continue menu is on, your printer starts printing on the current paper about 1 second after the PS error message appears. When this happens, the printer's memory may lose some data if the paper size in the tray is smaller than the paper size set in SelecType.

The paper is old or creased. Discard the old paper and load new, clean paper. If your paper is creased, you may not be using the proper size paper. Use only paper sizes that are within the range specified in Chapter 7.

Paper guides on the paper tray cover are too loose. Adjust the guides so that the paper slides in and out freely.

---

## Options

### Problem

### Solution

---

**When you use an optional font card, the printer does not operate as expected.**

*The desired font cannot be selected.*

*You cannot select fonts from the card and the message CE appears on the display.*

The font source menu or the font number menu of SelecType may not be set correctly. After you install the font card, change the font setting as described in Chapter 4.

The correct page orientation (portrait or landscape) may not be selected. Only fonts containing the selected orientation are available. See Chapter 4.

You may not have inserted the card correctly. Follow instructions in Chapter 4 to insert the card. Then press ON LINE to resume printing.

## Problem

## Solution

**When you use an optional interface, the printer does not operate as expected.**

*The printout is garbled or the printer does not print.*

The interface may not be configured correctly. If you are using a serial interface, make sure that both the computer and printer are set to use the same number of data bits per word and that they both use the same parity, baud rate, and number of stop bits. See your computer manual for the correct settings.

You may also need to change the DIP switch settings of your interface board. Before changing these settings, however, make sure the printer is turned off. See Chapter 4.

The optional interface may not be installed correctly. Turn off the printer and unplug the interface cable and power cable. Then check to see that the mating connector of the interface is plugged into the main board correctly. See Chapter 4.

You may be using the wrong interface cable. Check with your dealer to make sure you have the right cable. Also make sure that you are using a shielded cable.

**Problem****Solution**

---

**After you install an optional memory board, the printer does not function as expected.**

*The printer does not print.*

*Complex pages still cannot be printed. The display reads ho or hF.*

The board is not installed correctly. Turn on the printer and use SelecType to try to print a status sheet. Check the memory size listed on the report. If the memory size has not changed since you installed the board, install the board again as described in Chapter 4.

Even with the additional memory board installed, you may not have enough memory to support the pages you have created. Simplify the pages you are trying to print by removing text, choosing simpler graphics, or using software commands to break the document into more pages.

---

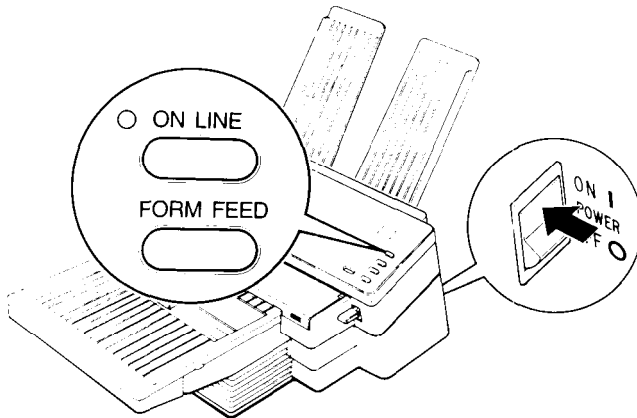
---

## Data Dump Mode

Data dump mode is a special feature that makes it easy for experienced users to identify the cause of communications problems between the printer and the application programs. The data dump mode produces a printout of the codes reaching the printer.

Follow these steps to use the data dump mode:

1. Make sure that the printer is loaded with either single-sheet. or continuous paper.
2. If the printer is on, switch it off. Then hold down both ON LINE and FORM FEED at the same time you turn on the printer.



The display reads *Hd* and the printer waits for data. If you are using continuous paper, the printer feeds the paper automatically, then waits for data.



- Run any program that causes the printer to print (either an application program or one in any programming language). The printer prints out all the codes sent from your computer. An example of a data dump printed in LQ emulation mode is shown below.

```

0000 1B 40 1B 52 00 1B 74 01 1B 36 0C 1B 50 1B 70 00 .@.R..t..6..P.p.
0001 20 20 54 68 69 73 20 69 73 20 61 6E 20 65 78 61 This is an exa
0002 6D 70 6C 65 20 6F 66 20 61 20 64 61 74 61 20 64 mple of a data d
0003 75 6D 70 20 70 72 69 6E 74 6F 75 74 2E 20 54 68 ump printout. Th
0004 69 73 20 66 65 61 74 75 72 65 20 6D 61 6B 65 73 is feature makes
0005 20 69 74 20 65 61 73 79 20 74 6F 20 63 6F 6E 66 it easy to conf
0006 69 72 6D 20 74 68 65 20 64 61 74 61 20 73 65 6E irm the data sen
0007 74 20 66 72 6F 6D 20 79 6F 75 72 20 63 6F 6D 70 t from your comp
0008 75 74 65 72 20 74 6F 20 74 68 65 20 70 72 69 6E uter to the prin
0009 74 65 72 2E 0D 0A ter...

```

On the left side of the printout all the codes are printed in hexadecimal format. On the right side of the printout all printable characters are printed, and the others, such as control codes, are represented by dots.

- To turn off the data dump mode, press **ON LINE** to set the printer off line. If the display reads **FF**, press **FORM FEED** to print any remaining data in the printer's memory.
- Turn off the printer.

By reading the characters printed in the text field on the right side of the data dump printout (see step 3) or the printout of hex codes, you can check which codes are being sent to the printer.

To interpret the sample data dump printout, examine the first three hex codes on the second line of the printout sample (20 20 54). Each hex code 20 represents a space; hex code 54 represents the letter T. Check the second line of the text field on the right side of the printout and you will find the letter T preceded by two spaces.

## *Data Dump Mode*

The chart below interprets the first eight codes of the sample printout.

Hex codes	Command	Function
1B40	ESC @	Initialize printer
1B5200	ESC R0	Select USA character set
1B7401	ESC t1	Select Epson Extended Graphics set

# Chapter 7

## Technical Specifications

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---

# Printer Specifications

## Printing

**Printing method:** On demand ink jet  
64 nozzles (16 x 4 staggered)

**Resolution:** 300 dpi (horizontal, vertical)

**Printing speed:** The printing speed varies depending on the font and quantity of data.

---

Mode	Paper size	Page coverage	Approximate pages per minute
Letter quality	Letter	5%	1
Draft	Letter	2.5%	2

---

**Printing direction:** Bidirectional with logic-seeking  
Unidirectional

## Resident Fonts

### HP emulation mode:

Courier (10 cpi)	Upright	P/L
Courier (10 cpi)	Bold	P/L
Line printer (16.66 cpi)	Upright	

**LQ and FX  
emulation mode:**

Courier (10 cpi)	Upright/italic*	Medium/Bold	P/L
Line printer (16.66 cpi)	Upright/Italic*	Medium/Bold*	P/L
Prestige (12 cpi)	Upright/Italic'	Medium/Bold*	P/L.*
Prestige (20 cpi)	Upright/Italic'	Medium/Bold*	P/L.'

P= portrait, L= landscape

\*The printer creates the italic, bold, and landscape effects internally instead of using separate fonts.

**Paper Delivery**

**Paper feed methods:**

Automatic feed from the built-in paper tray (single sheets, envelopes)

Capacity: Up to 180 sheets of 17 lb. (64 g/m<sup>2</sup>) paper

Up to 150 sheets of 22 lb. (82 g/m<sup>2</sup>) paper

Up to 30 sheets of 24 lb. (90 g/m<sup>2</sup>) paper or up to 30 24 lb. (90 g/m<sup>2</sup>) envelopes

Manual insertion (single sheets, envelopes)

Optional push tractor. (The manual that comes with the push tractor describes its specifications.)

## *Printer Specifications*

<b><i>Paper feed direction:</i></b>	Single sheets
	Letter, A4 sizes      Portrait, landscape
	All other sizes      Portrait
	Envelopes      Landscape
<b><i>Paper feed speed:</i></b>	4.0 ips (inches per second)
	This is the speed at which the printer feeds paper continuously. It is not the printing speed.
<b><i>Paper eject:</i></b>	Face up, into the output tray
	Capacity:      Up to 50 letter size pages at less than 25% page coverage
	Up to 30 letter size pages at more than 25% page coverage
	Remove pages printed at high page coverage levels one by one, before the printer ejects the next page into the output tray.

**Paper****Single sheets**

<b>Quality:</b>	Plain, bond The EPI-4000 cannot print on multi-part forms or roll paper.
<b>Width:</b>	7.2 inches to 11.8 inches (182mm to 300mm)
<b>Length:</b>	7.2 inches to 17 inches (182mm to 431.8mm)
<b>Thickness:</b>	0.0031 inches to 0.004 inches (0.07mm to 0.1mm)
<b>Weight:</b>	17 lb. to 22 lb. (64 g/m <sup>2</sup> to 82 g/m <sup>2</sup> ) The EPI-4000 can print on 24 lb. paper at normal temperatures only.
<b>Sizes:</b>	Letter, legal, executive, A4, A3, ledger (B) You set the paper size using SelecType.

**Envelopes**

<b>Quality:</b>	Plain, bond, air mail On some envelopes, the glue melts and <b>smears</b> when the envelopes are exposed to high temperatures and high humidity, such as 104° F (40° C), 85% RH. Because this may cause printing problems, use quality envelopes.
<b>Width:</b>	6.5 inches to 9.5 inches (166mm to 240mm)

## ***Printer Specifications***

**Length:** 3.6 inches to 4.3 inches (92mm to 110mm)

You can set the following three envelope sizes using SelectType:

No. 6: 3.625 inches x 6.5 inches  
(92mm x 166mm)

No. 10: 4.125 inches x 9.5 inches  
(104mm x 241mm)

DL: 4.33 inches x 8.66 inches  
(110mm x 220mm)

**Thickness:** 0.0064 inches to 0.020 inches  
(0.16mm to 0.52mm)

Differences in thickness within the printable area must be less than 0.010 inches (0.25mm).

**Weight:** 12 lb. to 24 lb. (45 g/m<sup>2</sup> to 90 g/m<sup>2</sup>)

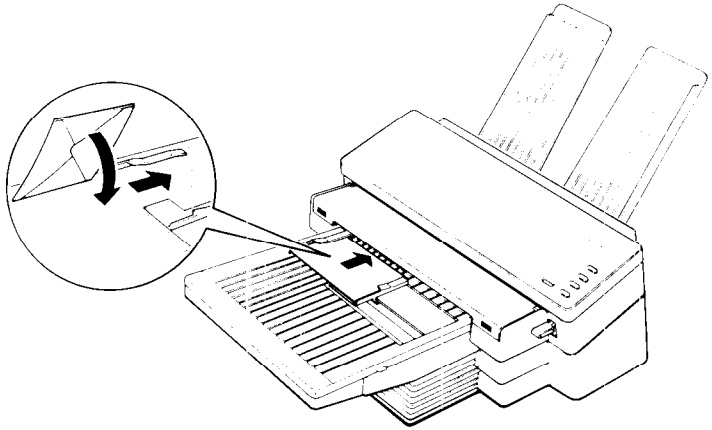
You can manually load 24 lb. envelopes at normal temperatures only.



Paper feed  
direction:

Landscape only

When you load envelopes, move the envelope lever to the envelope position. Insert envelopes face up (with the flap side down) and with the flap edge entering the printer first, as shown below.



When you load a stack of envelopes into the paper tray, adjust the paper guides to match the width of the envelopes.



- Do not print outside of the printable area.
- Do not use envelopes smaller than 6.5 inches x 3.6 inches (166mm x 92mm).

## Printable Area

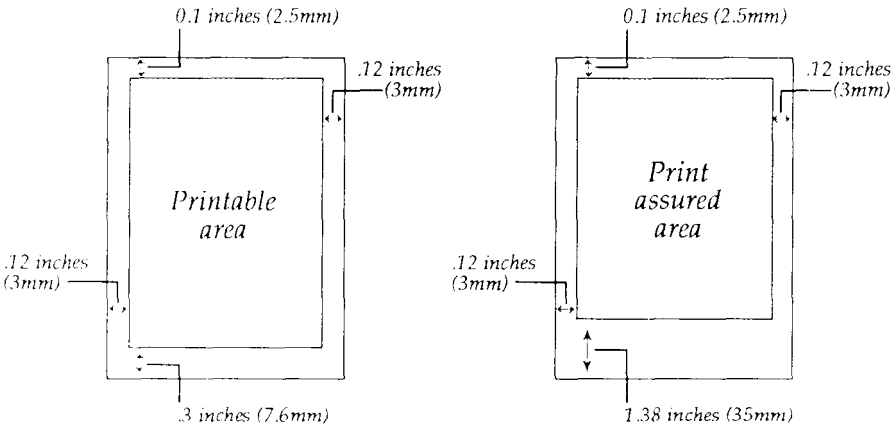
The printable area depends on the printer mode. This section shows the printable and print assured area for single sheets and envelopes and the printable area in HP, LQ, and FX emulation modes.



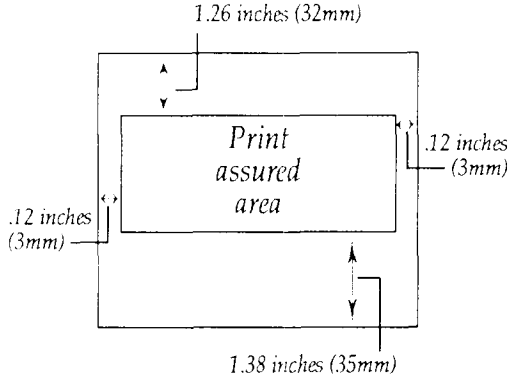
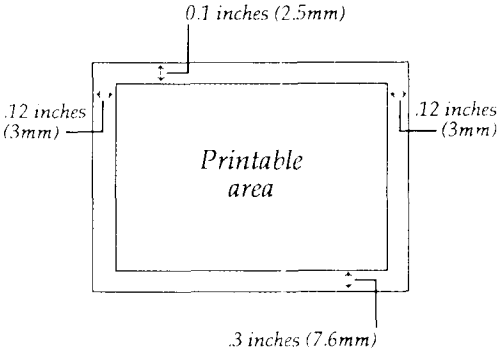
**CAUTION:** Do not print outside of the printable area.

### Note:

- The printing pitch is not assured below 1.43 inches (35.77mm) from the bottom edge of the paper.
- If you try to print to the left of the edge of the paper, the characters that would print to the left of the paper's edge are lost and not printed.
- The manual that comes with the optional push tractor provides specifications on the printable area for continuous paper.

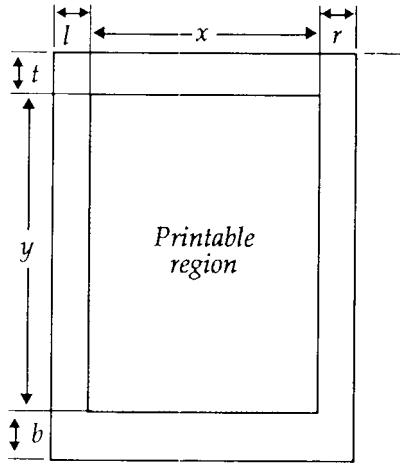


**Note:** The total length of the single sheet can be from 7.2 to 17 inches (182 to 431.8mm). The total width of the sheet can be from 7.2 to 11.8 inches (182 to 300mm).

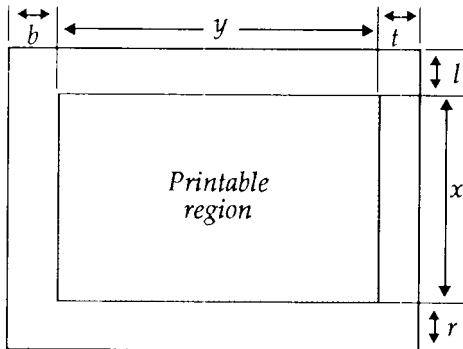


**Note:** The total length of the envelope shown above can be from 3.6 to 4.3 inches (92 to 110mm). The total width of the envelope can be from 6.5 to 9.5 inches (166 to 240mm).

**Printable area in HP emulation mode**



↑  
Paper feeding direction  
Portrait



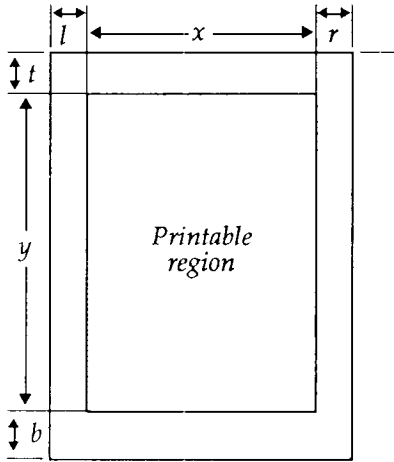
→  
Paper feeding direction  
Landscape

Printable area in HP emulation mode

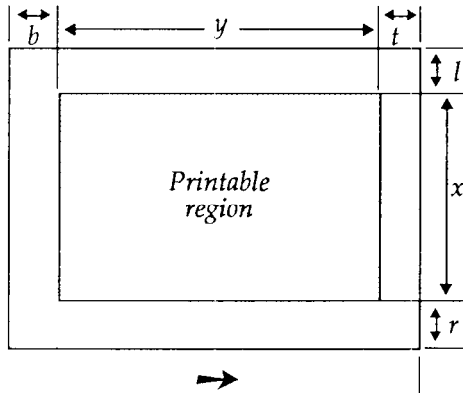
Paper size	l	x	r	t	y	b
Letter	75	2400	75	30	3180	90
Legal	75	2400	75	30	4080	90
Executive	75	2025	75	30	3030	90
B (ledger)	75	3150	75	30	4980	90
Letter (landscape) setting)	75	3150	75	30	2430	90
A4	75	2338	67	30	3389	88
A3	35	3365	107	30	4842	88
A4 (landscape) setting)	35	3365	107	30	2362	88
#10 (landscape) setting)	75	2700	75	30	1117	90
#6 (landscape setting)	75	1800	75	30	967	90
D L (landscape setting)	75	2456	67	30	1181	88

Note: The units used in this table are dots at 300 dpi. The values in this table can be slightly affected by such items as the elasticity of the paper you are using.

**Printable area in LQ and FX emulation mode**



↑  
*Paper feeding direction*  
*Portrait*



→  
*Paper feeding direction*  
*Landscape*

Printable area in LQ and FX emulation mode

Paper size	l	x	r	t	y	b
Letter	75	2400	75	45	3150	105
Legal	75	2400	75	45	4050	105
Executive	75	2025	75	45	3000	105
B (ledger)	75	3150	75	45	4950	105
Letter (landscape setting)	75	3150	75	45	2400	105
A4 (landscape printing)	75	2330	75	45	3357	105
A4 (portrait printing)	35	2400	45	45	3357	105
A3	60	3307	140	45	4810	105
A4 (landscape setting)	60	3307	140	45	2330	105
#10 (landscape setting)	75	2700	75	45	1087	105
#6 (landscape setting)	75	1800	75	45	937	105
DL (landscape setting)	75	2488	75	45	1149	105

Note: The units used in this table are dots at 300 dpi. The values in this table can be slightly affected by such items as the elasticity of the paper you are using.

**Ink**

**Type:** Exclusive ink cartridge #SO20003

**Color:** Black

**Ink capacity:** Approximately 3.72 fluid ounces (110ml)

**Ink cartridge print capacity:** When the printer first displays the IL message, there is enough ink left in the cartridge to print approximately 20 letter size pages at 5% page coverage.

Mode	Page coverage	Number of letter size pages
Letter quality	5%	1000
Draft	2.5%	2000

**Ink life:** Two years

Do not use an ink cartridge after its expiration date has passed.

**Temperature:**

Storage: -4° F to 104° F (-20° C to 40° C)

Transit: -22° F to 150° F (-30° C to 65° C)

The ink cartridge can be stored at 68° F (20° C) for two years. During that time, it can also withstand one month at 104° F (40° C) and 120 hours at 149° F (65° C).

The ink freezes at 16° F (-9° C). Ink that has been frozen can be used after it is thawed. It takes approximately **1 1/2** hours to thaw at 77° F (25° C).

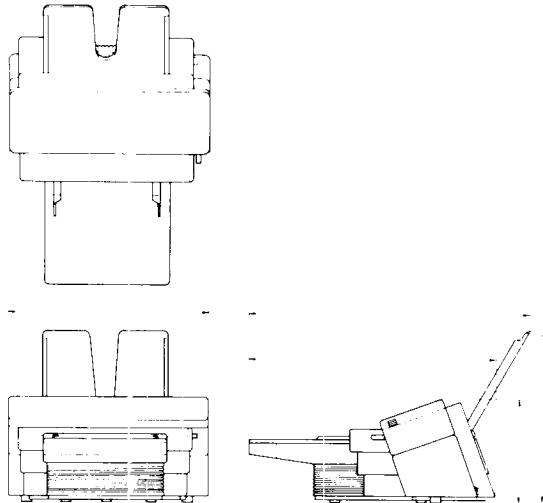


**Cartridge weight:** 8.75 ounces (250 g)  
**Cartridge dimensions:** 4.2 inches (W) x 6.3 inches (D) x 1.3 inches (H)  
106mm (W) x 157mm (D) x 33.5mm (H)

**Mechanical**

**External dimensions:** Excluding the output tray:  
22.7 inches (W) x 28.2 inches (D) x 12.0 inches (H)  
568mm (W) x 705mm (D) x 299mm (H)

Including the output tray:  
22.7 inches (W) x 31.9 inches (D) x 19.6 inches (H)  
568mm (W) x 798mm (D) x 491mm (H)



## Printer Specifications

<b>Weight:</b>	Approximately 39.6 lbs. (18 kg.)
<b>Noise:</b>	50 dBA
<b>Reliability:</b>	MCBF (Mean Cycles Between Failure): 5 million lines (excluding print head)  MTBF (Mean Time Between Failure): 5,000 power on hours at 25% duty  Print head life: 2 billion dots per nozzle

### Electrical

<b>Rated voltage:</b>	<b>120 VAC</b>
<b>Allowable voltage range:</b>	<b>103.5 VAC to 132 VAC</b>
<b>Rated frequency range:</b>	<b>50 Hz to 60 Hz</b>
<b>Allowable frequency range:</b>	<b>49.5 Hz to 60.5 Hz</b>
<b>Rated current:</b>	<b>3.0 A</b>
<b>Power consumption:</b>	250 watts maximum
<b>Insulation resistance:</b>	10 Mohms minimum (at 500 VDC between AC line and chassis)
<b>Dielectric strength:</b>	Can withstand 1000 VAC rms applied for one minute or 1200 VAC rms applied for one second (between AC line and chassis)

## **Controller Hardware**

**CPU:** 68000, 10 MHz

**RAM:** Standard: 512KB  
Optional: 2MB memory board

**ROM:** Font: 512KB  
Program: 256KB

**Host interface:** Standard:

Centronics parallel interface  
RS-232C serial interface

Optional:

#8143 New serial interface  
#8148 Intelligent serial interface  
#8165 IEEE-488 interface  
Coax interface  
Twinax interface

Coax and Twinax interfaces are available from Epson dealers. These interfaces allow connectivity to mainframes and minicomputers and emulation of IBM printers.

**IC card:** Slot A: For font cards and identity cards  
Slot B: For font cards only

**Internal software modes:**

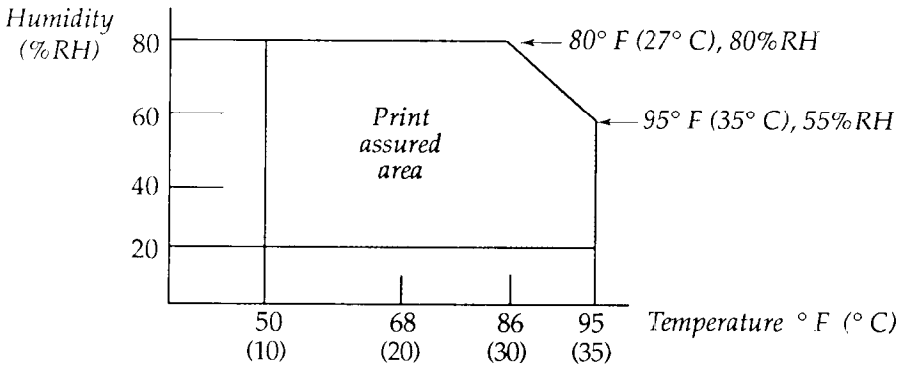
HP LaserJet series II emulation mode  
ESC/P 9-pin (FX-1000/800, 286e/86e) emulation mode  
ESC/P 24-pin (LQ-2500) emulation mode

# Printer Specifications

## Environment

- Temperature:** Operating: 50° F to 95° F (10° C to 35° C)  
Storage: -4° F to 104° F (-20° C to 40° C)  
In shipping container: -22° F to 150° F C-30° C to 65° C)
- Humidity:** 20% to 80% RH  
5% to 85% RH  
without condensation

The following figure illustrates the possible combinations of temperature and humidity in the operating environment.



# Interface Specifications

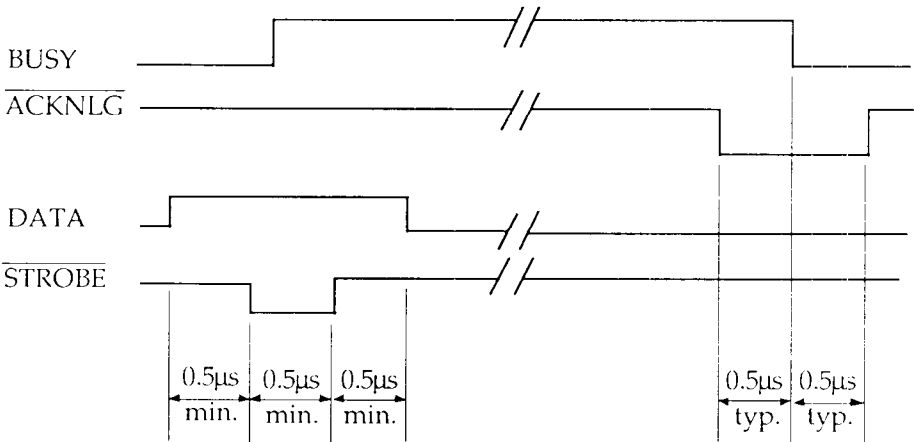
Your printer comes with both a parallel and a serial interface.

## Parallel Interface

The built-in parallel interface has the following characteristics:

- Data format:** 8 bit parallel
- Synchronization:**  $\overline{\text{STROBE}}$  pulse
- Handshaking timing:**  $\text{BUSY}$  and  $\overline{\text{ACKNLG}}$  signal
- Signal level:** TTL compatible level
- Connector:** 36-pin 57-30360 (amphenol) connector or equivalent

Timing chart



Note: The transition time (rising falling time) of each signal must be less than  $0.2\mu\text{s}$ .

Pin assignments for the parallel interface

The following table provides the parallel interface connector pin assignments and describes the interface signals.

Signal pin	Return pin	Signal	Direction	Description
	19	$\overline{\text{STROBE}}$	IN	The $\overline{\text{STROBE}}$ pulse to read the input data. The pulse width should be more than 0.5 $\mu$ s at the receiving terminal. Input data is latched after the falling edge of this signal.
2 3 4 5 6 7 8 9	20 21 22 23 24 25 26 27	DATA 1 DATA 2 DATA 3 DATA 4 DATA 5 DATA 6 DATA 7 DATA 8	IN IN IN IN IN IN IN IN	These signals represent information in the first to eighth bits of parallel data, respectively. Each signal is HIGH when data is logical 1 and LOW when it is logical 0.
10	28	$\overline{\text{ACKNLG}}$	OUT	About an 11 $\mu$ s pulse. LOW indicate;; that data has been received and that the printer is ready to accept more data This signal is paired with the BUSY signal.
11	29	BUSY	OUT	A HIGH signal indicates that the printer cannot receive data. The signal goes HIGH in the following cases: <ul style="list-style-type: none"> <li>• during data entry (for each character)</li> <li>• when the printer is off line</li> <li>• during a printer-error state.</li> </ul>
Text	30	PE	OUT	A HIGH signal indicates that the printer is out of paper. The signal is effective only when the ERROR signal is low.
Text		SLCT	OUT	Pulled up to +5V through 3.3 Kohm resistance.

# Interface Specifications

Signal pin	Return pin	Signal	Direction	Description
14	-	AUTO FEED XT	IN	If this signal is LOW when the printer is initialized, a line feed is automatically performed by inputting a CR code (in LO and FX mode only). SelecType can be used to produce the same effect.
15	-	NC	-	Not used.
16	-	GND	-	Logic ground level.
17		CHASSIS GND		Printer's chassis ground, which is isolated from the logic ground.
18		NC		Not used.
19-30	-	GND	-	Twisted-pair return signal ground level.
31	-	INIT	IN	When this signal goes LOW, the printer ignores the STROBE signal.
32	-	ERROR	OUT	This level becomes LOW when the printer is: <ul style="list-style-type: none"> <li>• in a paper-out state</li> <li>• off line</li> <li>• in an error state.</li> </ul>
33	-	GND	-	Twisted-pair return signal ground level.
34		NC	-	Not used.
35	-	+5v	OUT	Pulled up to +5V through 3.3 Kohm resistance.
36		SLCT IN	IN	The DC1/DC3 control codes are valid only when this signal is HIGH (when SLCT IN is set to off).

## ***Interface Specifications***

Note:

- All interface conditions are based on the TTL level. The transition time (rising and falling time) of each signal must be less than 0.2 $\mu$ s.
- Data transfer is carried out by observing the  $\overline{\text{ACKNLG}}$  or  $\overline{\text{BUSY}}$  signal. Data transfer to this printer occurs only after the receipt of the  $\overline{\text{ACKNLG}}$  signal or when the level of the  $\overline{\text{BUSY}}$  signal is LOW.
- The column heading “Direction” refers to the direction of signal flow as viewed from the printer.
- “Return” denotes the twisted-pair return to be connected at signal ground level. Be sure to use a twisted-pair cable for the interface wiring of each signal and to complete the connection on the return side. These cables should be shielded and connected to the chassis of the host computer and the printer.



## Serial Interface

The built-in serial interface is an asynchronous RS-232C interface. It has the following characteristics:

<b><i>Synchronization:</i></b>	Asynchronous
<b><i>Data format:</i></b>	Start bit: 1 bit Word length: 7 or 8 bits Parity bit: Odd, even, or none Stop bit: 1 bit or more
<b><i>Baud rate:</i></b>	<b>300, 600, 1200, 2400, 4800, 9600, 19200</b> bits per second
<b><i>Signal level:</i></b>	RS-232C Mark (1) -3V to -27V Space (0) +3V to +27V
<b>Handshaking:</b>	Handshaking is by DTR signal, X-ON/X-OFF, or a combination of both

## ***Interface Specifications***

Available Bytes in Input Buffer	Printer Status	Signal
Decreases to 256 bytes	Cannot receive input data	Sends X-OFF code or set DTR to 1 (Mark)
Increases to 512 bytes	Can receive input data	Sends X-ON code or set DTR to 0 (Space)

Note: There is a SelectType setting that causes X-ON/X-OFF transmission to be ignored.

### **Error handling:**

If a parity error is detected, the printer prints an asterisk (\*). All other errors, such as an overrun error or a framing error, are ignored.

### **Connector:**

25-pin D-SUB connector

Pin assignments for the serial interface

Pin	Signal	Direction	Description
1	Chassis GND	-	This is connected to the printer chassis.
2	TXD	OUT	Transmits data for X-ON/X-OFF.
3	RXD	IN	Received data. This pin transmits serial data from the computer to the printer.
7	Signal GND	-	Signal (logic) ground level.
11	REV	OUT	Same as DTR. (= 2nd RTS)
20	DTR	OUT	Data terminal ready. This pin indicates whether the printer is ready to receive data. If the printer ready protocol is not selected, this pin is always HIGH (that is, the printer is ready to receive data). If the printer ready protocol is selected, the printer can accept data when the pin level is LOW. When the DTR signal goes LOW, the host computer must stop sending data within 128 characters. The DTR signal can be set HIGH or LOW with Selectype.

Note: The column heading "Direction" refers to the direction of signal flow as viewed from the printer.

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## Initialization

The table below describes how the printer can be initialized (returned to a fixed set of conditions).

Initialization type	Occurs when
Hardware	You turn on the printer.
Software	Software sends the printer-initialize command. You press the printer's RESET button. You perform a factory reset by holding down the printer's RESET button for more than five seconds.

In the table above, the first three ways to initialize the printer have identical results. The fourth way to initialize the printer, the factory reset, produces a different set of parameters.

The following tables list the default conditions that become valid when the printer is initialized. The default conditions depend on the printer mode.

**Default Settings in HP Emulation Mode**

Item	Factory Reset	Reset
Paper size	Letter	SelectType setting
Printing direction	Portrait	SelectType setting
Copy count	1	1
Page length		
Portrait	66 lines	SelectType setting
Landscape	51 lines	SelectType setting
VMI	8/48 inch (6 lines per inch)	Page length minus 1 divided by text length. (The page length and text length values are fixed and depend on the SelectType paper size setting. The page length and text length are measured in inches.)
HMI	12/120 inch (10 cpi)	HMI of the selected font
Top margin	1/2 inch (150 dots)	1/2 inch (150 dots)
Text length		
Portrait	60 lines	SelectType setting
Landscape	45 lines	SelectType setting
Left margin	Logical page left margin	Logical page left margin
Right margin	Logical page right margin	Logical page right margin
Perforation skip	On	SelectType setting
Line termination	CR=CR, LF=LF, FF=FF	CR=SelectType setting, LF=LF, FF=FF

## **Initialization**

Item	Factory Reset	Reset
Fonts (both primary and secondary) Symbol set Spacing Pitch Height Style Strokeweight Typeface	Roman-8 Fixed 10 cpi 12 Upright Medium Courier	* * * * * * *
Underline	Off	Off
Font ID	0	0
Character code	0	0
Raster graphic resolution	75 dpi	75 dpi
Macro ID	0	0
End of line wrap	Off	Off
Display function Advanced graphics	Off H-size = 0, V-size = 0, ID = 0	Off H-size = 0, V-size = 0, ID = 0
Symbol set	Roman-8	SelectType setting

\*Font numbers are saved in NVRAM, and font attributes are selected with the SelectType symbol set menu.

## Default Settings in LQ and FX Emulation Mode

Item	Factory Reset	Reset
Paper size	Letter	SelectType setting
Printing direction	Portrait	SelectType setting
Page length	62 lines	SelectType setting
Perforation skip	Disable	SelectType setting
Left margin	Left edge of the printable area	Left edge of the printable area
Right margin	80 columns (10 cpi)	Depends on the default right margin set with SelectType.
Line space	1/6 inch	1/6 inch
Horizontal tab settings	Every eight characters. (The character width is 10 cpi.)	Every eight characters. (The character width depends on the SelectType condensed print menu setting.)
Vertical tab positions	Cleared	Cleared
VFU channel	Channel 0	Channel 0
Character spacing SelectType	10 cpi	Depends on the condensed print menu setting.
International character set	USA	SelectType setting
Typeface	Courier	SelectType setting
Character table	Epson Extended Graphics character table	SelectType setting
Condensed	Off	SelectType setting
Underline, Superscript, subscript, doublewide, bold	Off	Off

# Appendix A

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## **Resident Fonts and Symbol Sets**

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LQ and FX Emulation Mode .....	A-12
Resident Fonts .....	A-12
Character Sets.....	A-13
Converting Hexadecimal Numbers to Decimals .....	A-17





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## HP Emulation Mode

This section describes the resident fonts and symbol sets available in HP emulation mode.

Note: The EPI-4000's default (factory) setting is HP emulation mode.

### Resident Fonts

The EPI-4000 offers a variety of resident bitmap fonts in HP emulation mode. The resident fonts differ in point size, weight, and other characteristics. You will probably use these fonts very often, and they may meet all your printing needs. You can access additional fonts using font cards as described in Chapter 4.

The following table lists the resident fonts available in HP emulation mode and provides samples of text printed with them.

Font name	Cpi	Orientation	Sample
Courier	10	P/L	HIJabcdefghij0123!"#\$
Courier bold	10	P/L	HIJabcdefghij0123!"#\$
Line printer	16.66	P/L	ABCDEFGHJabcdefghij0123!"#\$%&'()*+

P-portrait L-landscape

Note: The font samples in the table show only portrait orientation since the character itself is the same in portrait or landscape orientation.

To select a resident font, you can use your application program as described in the section on selecting a font with your application program in Chapter 4. You can also select resident fonts using SelecType (the font source and font number menus described in Chapter 2) or printer commands.

## **Symbol Sets**

In HP emulation mode, the EPI-4000 allows you to use a variety of symbol sets, which provide you with international, legal, and other special characters. Many of these symbol sets differ only in the international characters specific to each language.

To select a symbol set in HP emulation mode, you can use your application program or the SelecType symbol set menu described in Chapter 2. You can also select symbol sets using printer commands.

This section provides character tables for a representative sample of the symbol sets available in HP emulation mode. The tables show both the characters and their hexadecimal values.

To find the hexadecimal value for a character, find the character on the table. Move to the top of the column for the first digit of the hexadecimal character. Then move to the far left of the row for the second digit. For example, the character “Z” has a hexadecimal value of 5A.

To find the decimal value for a character, determine the hexadecimal value for the character. Then use the table at the end of this chapter to convert the hexadecimal value to a decimal value.

---

Note: The ID number under the symbol set name provides the unique portion of the escape sequence needed to select that particular symbol set.

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HP Emulation Mode

HP Roman-8 (Symbol Set ID # 8U)

	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
0			0	@	P	'	p				-	â	Å	Á	Ð	
1			!	1	A	Q	a	q			À	Ý	ê	î	Ã	þ
2			"	2	B	R	b	r			Â	ÿ	ô	ø	ã	.
3			#	3	C	S	c	s			È	°	û	Æ	Ð	µ
4			\$	4	D	T	d	t			Ê	Ç	á	â	ð	π
5			%	5	E	U	e	u			Ë	ç	é	í	í	¾
6			&	6	F	V	f	v			Î	Ñ	ó	ø	ì	-
7			'	7	G	W	g	w			Ï	ñ	ú	æ	ó	¼
8			(	8	H	X	h	x			´	;	à	Ä	Ò	½
9			)	9	I	Y	i	y			`	;	è	ì	Õ	¾
A			*	:	J	Z	j	z			^	¤	ò	Ö	õ	º
B			+	;	K	[	k	{			¨	£	ù	Ü	š	«
C			,	<	L	\	l				~	¥	ä	É	š	■
D			-	=	M	]	m	}			Ù	§	ë	ï	Ú	»
E			.	>	N	^	n	~			Û	f	ö	ß	ÿ	±
F			/	?	O	_	o	※			£	¢	ü	ô	ÿ	

HP Roman-8 Extension (Symbol Set ID # 0E)

	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
0				ˆ	â	Á	Á	Ɔ								
1			À	Ý	ê	î	Ã	Ɔ								
2			Â	ý	ô	ø	ã	·								
3			È	°	û	Æ	Ɔ	μ								
4			Ê	Ç	á	å	ð	π								
5			Ë	ç	é	í	í	¾								
6			Î	Ñ	ó	ø	ì	-								
7			Ï	ñ	ú	æ	ó	¼								
8			´	;	à	Ä	ò	½								
9			˘	¿	è	ì	õ	ã								
A			^	¤	ò	Ö	õ	◊								
B			¨	£	ù	Ü	Š	«								
C			˜	¥	ä	É	š	■								
D			Ù	Š	è	ì	Ú	»								
E			Û	ƒ	ö	ß	ÿ	±								
F			£	¢	ü	ô	ÿ									

	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
0		▶		0	@	P	`	p	Ç	É	á	▒	L	⌌	α	≡
1	⊕	◀	!	1	A	Q	a	q	ü	æ	í	▒	⊥	⌌	β	±
2	⊕	↑	"	2	B	R	b	r	é	Æ	ó	▒	⊥	⌌	Γ	≥
3	♥	!!	#	3	C	S	c	s	â	ô	ú		⊥	⌌	π	≤
4	♦	π	\$	4	D	T	d	t	ä	ö	ñ	⊥	-	⊥	Σ	∫
5	♣	§	§	5	E	U	e	u	à	ò	Ñ	⊥	⊥	⊥	σ	∫
6	♠	-	&	6	F	V	f	v	â	û	õ	⊥	⊥	⊥	μ	÷
7	·	±	'	7	G	W	g	w	ç	ù	Ö	⊥	⊥	⊥	τ	≈
8	■	↑	(	8	H	X	h	x	ê	ÿ	¿	⊥	⊥	⊥	Φ	°
9	○	↓	)	9	I	Y	i	y	ë	Ö	ã	⊥	⊥	⊥	θ	·
A	◻	→	*	:	J	Z	j	z	è	Ü	Ã	⊥	⊥	⊥	Ω	·
B	♂	←	+	;	K	[	k	{	ï	ø	ø	⊥	⊥	■	δ	√
C	♀	⊥	,	<	L	\	l		î	£	h	⊥	⊥	■	∞	η
D	♯	↔	-	=	M	]	m	}	ì	Ø	;	⊥	=	■	∅	²
E	♯	▲	.	>	N	^	n	~	Ä	£	³	⊥	⊥	■	ε	■
F	✱	▼	/	?	O	_	o	✱	Å	⊥	α	⊥	⊥	■	∩	

HP IBM-Denmark/Norway (Symbol Set ID # 11U)

	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
0		▶		0	@	P	`	p	Ç	É	á	☒	ℓ	⊥	α	≡
1	☉	◀	!	1	A	Q	a	q	ü	æ	í	☒	⊥	⊥	β	±
2	☉	‡	"	2	B	R	b	r	é	Æ	ó	☒	⊥	⊥	Γ	≥
3	♥	!!	#	3	C	S	c	s	â	ô	ú		⊥	⊥	π	≤
4	♦	π	\$	4	D	T	d	t	ä	ö	ñ	⊥	-	⊥	Σ	∫
5	♣	§	%	5	E	U	e	u	à	ò	Ñ	⊥	+	⊥	σ	∫
6	♠	-	&	6	F	V	f	v	ã	û	ä	⊥	⊥	⊥	μ	÷
7	·	‡	'	7	G	W	g	w	ç	ù	ø	⊥	⊥	⊥	τ	≈
8	■	↑	(	8	H	X	h	x	ê	ÿ	¿	⊥	⊥	⊥	Φ	°
9	○	↓	)	9	I	Y	i	y	ë	Ö	⊥	⊥	⊥	⊥	θ	·
A	⊙	→	*	:	J	Z	j	z	è	Ü	-	⊥	⊥	⊥	Ω	·
B	♂	←	+	;	K	[	k	{	ï	¼	½	⊥	⊥	■	δ	√
C	♀	⊥	,	<	L	\	l		î	£	¼	⊥	⊥	■	∞	η
D	♩	↔	-	=	M	]	m	}	ï	¥	;	⊥	=	■	∅	²
E	♪	▲	.	>	N	^	n	~	Ä	⊥	«	⊥	⊥	■	ε	■
F	*	▼	/	?	O	_	o	⊗	Å	f	»	⊥	⊥	■	∩	

ISO ANSI ASCII (Symbol Set ID # 0U)

	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
0			0	@	P	'	p									
1			!	1	A	Q	a	q								
2			"	2	B	R	b	r								
3			#	3	C	S	c	s								
4			\$	4	D	T	d	t								
5			%	5	E	U	e	u								
6			&	6	F	V	f	v								
7			'	7	G	W	g	w								
8			(	8	H	X	h	x								
9			)	9	I	Y	i	y								
A			*	:	J	Z	j	z								
B			+	;	K	[	k	{								
C			,	<	L	\	l									
D			-	=	M	]	m	}								
E			.	>	N	^	n	~								
F			/	?	O	_	o	*								

ISO ANSI International ISO Sets

Name	ID	35	36	64	91	92	93	94	96	123	124	125	126
ANSI ASCII	0U	#	\$	@	[	\	]	^	'	{		}	~
Norweg1	0D	#	\$	@	Æ	Ø	Å	^	`	æ	ø	å	~
French	0F	£	\$	à	°	ç	§	^	`	é	ù	è	~
HP German	0G	£	\$	§	Ä	Ö	Ü	^	`	ä	ö	ü	ß
Italian	0I	£	\$	§	°	ç	é	^	ù	à	ò	è	ì
JIS ASCII	0K	#	\$	@	[	¥	]	^	`	{		}	~
Swedis2	0S	#	¤	É	Ä	Ö	Å	Ü	é	ä	ö	å	ü
Norweg2	1D	£	\$	@	Æ	Ø	Å	^	`	æ	ø	å	
UK	1E	£	\$	@	[	\	]	^	`	{		}	~
French2	1F	£	\$	à	°	ç	§	^	μ	é	ù	è	~
German	1G	#	\$	§	Ä	Ö	Ü	^	`	ä	ö	ü	ß
HP Spanish	1S	#	\$	@	;	Ñ	¿	°	`	{	ñ	}	~
Chinese	2K	#	¥	@	[	\	]	^	`	{		}	~
Spanish	2S	£	\$	§	;	Ñ	¿	^	`	°	ñ	ç	~
IRV	2U	#	¤	@	[	\	]	^	`	{		}	~
Swedish	3S	#	¤	@	Ä	Ö	Å	^	`	ä	ö	å	~
Portuguese	4S	#	\$	§	Ã	Ç	Õ	^	`	ã	ç	õ	°
IBM Portuguese	5S	#	\$	·	Ã	Ç	Õ	^	`	ã	ç	õ	~
IBM Spanish	6S	#	\$	·	;	Ñ	Ç	¿	`	ñ	ç	~	~



HP Emulation Mode

ECMA-94 Latin 1 (Symbol Set ID # ON)

	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
0			0	é	P	`	p				°	À	Ð	à	ð	
1		!	1	A	Q	a	q			;	±	Á	Ñ	á	ñ	
2		"	2	B	R	b	r			¢	²	Â	Ò	â	ò	
3		#	3	C	S	c	s			£	³	Ã	Ó	ã	ó	
4		\$	4	D	T	d	t			¤	´	Ä	Ö	ä	ö	
5		%	5	E	U	e	u			¥	µ	Å	Õ	å	õ	
6		&	6	F	V	f	v			¦	¶	Æ	Ö	æ	ö	
7		'	7	G	W	g	w			§	·	Ç	×	ç	÷	
8		(	8	H	X	h	x			¨	,	È	Ø	è	ø	
9		)	9	I	Y	i	y			©	¹	É	Ù	é	ù	
A		*	:	J	Z	j	z			ª	º	Ê	Ú	ê	ú	
B		+	;	K	[	k	{			«	»	Ë	Û	ë	û	
C		,	<	L	\	l				-	¼	Ì	Ü	ì	ü	
D		-	=	M	]	m	}			-	½	Í	Ý	í	ý	
E		.	>	N	^	n	~			®	¾	Î	ß	î	þ	
F		/	?	O	_	o	*			-	¿	Ï	ß	ï	ÿ	

HP Legal (Symbol Set ID # 1U)

	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
0			0	@	P	°	p									
1			!	1	A	Q	a	q								
2			"	2	B	R	b	r								
3			#	3	C	S	c	s								
4			\$	4	D	T	d	t								
5			⌘	5	E	U	e	u								
6			&	6	F	V	f	v								
7			'	7	G	W	g	w								
8			(	8	H	X	h	x								
9			)	9	I	Y	i	y								
A			*	:	J	Z	j	z								
B			+	;	K	[	k	⌘								
C			,	=	L	⊙	l	⌘								
D			-	=	M	]	m	†								
E			.	¢	N	⊙	n	™								
F			/	?	O	_	o	⌘								

---

## LQ and FX Emulation Mode

This section describes the resident fonts and character sets available in LQ and FX emulation mode.

Note: The EPI-4000's default (factory) setting is HP emulation mode. To change to LQ or FX emulation mode, use the SelecType printer mode menu described in Chapter 2.

### Resident Fonts

The EPI-4000 offers a variety of resident bitmap fonts in LQ and FX emulation mode. The resident fonts differ in point size, weight, and other characteristics. When the printer is in LQ or FX emulation mode, you will probably use these fonts very often, and they may meet all your printing needs. You can access additional fonts using font cards as described in Chapter 4.

The following table lists the resident fonts available in LQ and FX emulation mode and provides samples of text printed with them.

Font name	Cpi	Orientation	Sample
Courier	10	P/L	HIJabcdefghij0123!"#\$
Courier bold*	10	P/L	<b>HIJabcdefghij0123!"#\$</b>
Line printer . *	16.66	P/L	ABCDEFGHIJabcdefghij0123!"#\$%&'()*+*
Prestige	12	P	ABCDEFGHIJabcdefghij0123!
Prestige	20	P	ABCDEFGHIJabcdefghij0123!"#\$%&'()*+*,./

P-portrait L-landscape

\*Using your application program, you can make the Courier font bold.

"If you turn on condensed print using the SelecType condensed print menu, the printer uses the line printer font.

Note: The font samples in the table show only portrait orientation since the character itself is the same in portrait or landscape orientation.

To select a resident font, you can use your application program, the SelecType typeface menu described in Chapter 2, or printer commands.

## **Character Sets**

This section provides character tables for the character sets available in LQ and FX emulation mode. The tables show both the characters and their hexadecimal values.

To select a character set, you can use the SelecType extended graphics menu as described in Chapter 2.

To find the hexadecimal value for a character, find the character on the table. Move to the top of the column for the first digit of the hexadecimal character. Then move to the far left of the row for the second digit. For example, the character “Z” has a hexadecimal value of 5A.

To find the decimal value for a character, determine the hexadecimal value for the character. Then use the table at the end of this appendix to convert the hexadecimal value to a decimal value.

Epson Italic Character Table

CODE	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
0			0	@	P	'	p				0	@	P	'	p	
1		!	1	A	Q	a	q				!	1	A	Q	a	q
2		"	2	B	R	b	r				"	2	B	R	b	r
3		#	3	C	S	c	s				#	3	C	S	c	s
4		\$	4	D	T	d	t				\$	4	D	T	d	t
5		%	5	E	U	e	u				%	5	E	U	e	u
6		&	6	F	V	f	v				&	6	F	V	f	v
7		'	7	G	W	g	w				'	7	G	W	g	w
8		(	8	H	X	h	x				(	8	H	X	h	x
9		)	9	I	Y	i	y				)	9	I	Y	i	y
A		*	:	J	Z	j	z				*	:	J	Z	j	z
B		+	;	K	[	k	{				+	;	K	[	k	{
C		,	<	L	\	l	!				,	<	L	\	l	!
D		-	=	M	]	m	}				-	=	M	]	m	}
E		.	>	N	^	n	~				.	>	N	^	n	~
F		/	?	O	_	o					/	?	O	_	o	

**Note:** You do not need to select the italic character table to print italics. You can print italics when the extended graphics character table is selected.

Epson Extended Graphics Character Table

CODE	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
0				0	@	P	'	p	Ç	É	á		┌	└	α	≡
1		!	1	A	Q	a	q	ü	æ	í			┌	└	β	±
2		"	2	B	R	b	r	é	Æ	ó			┌	└	Γ	≈
3		#	3	C	S	c	s	â	ô	ú			┌	└	π	≠
4		\$	4	D	T	d	t	ä	ö	ñ		┌	└	Σ	∫	
5	§	%	5	E	U	e	u	à	ò	Ñ		┌	└	σ	∫	
6		&	6	F	V	f	v	å	û	æ		┌	└	μ	±	
7		'	7	G	W	g	w	ç	ù	œ		┌	└	τ	≈	
8		(	8	H	X	h	x	ê	ÿ	ç		┌	└	φ	°	
9		)	9	I	Y	i	y	ë	Ö	ı		┌	└	θ	•	
A		*	:	J	Z	j	z	è	Ü	ı		┌	└	Ω	•	
B		+	;	K	[	k	{	ï	ç	½		┌	└	δ	√	
C		,	<	L	\	l		î	£	¼		┌	└	ø	n	
D		-	=	M	]	m	}	ï	¥	;		┌	└	∅	z	
E		.	>	N	^	n	~	Ä	℞	«		┌	└	ε	■	
F		/	?	O	_	o		Å	f	»		┌	└	∅	∅	

# LQ and FX Emulation Mode

## Epson International Character Sets

	23	24	40	5B	5C	5D	5E	60	7B	7C	7D	7E
USA	#	\$	@	[	\	]	^	`	{		}	~
France	#	\$	à	°	ç	š	^	`	é	ù	è	~
Germany	#	\$	§	Ä	Ö	Ü	^	`	ä	ö	ü	ß
UK	£	\$	@	[	\	]	^	`	{		}	~
Denmark 1	#	\$	@	Æ	Ø	Å	^	`	æ	ø	å	~
Sweden	#	¤	É	Ä	Ö	Å	Ü	é	ä	ö	å	ü
Italy	#	\$	@	°	\	é	^	ù	à	ò	è	ì
Spain 1	¢	\$	@	;	Ñ	¿	^	`	ñ	}	}	~
Japan	#	\$	@	[	¥	]	^	`	{		}	~
Norway	#	¤	É	Æ	Ø	Å	Ü	é	æ	ø	å	ü
Denmark 2	#	\$	É	Æ	Ø	Å	Ü	é	æ	ø	å	ü
Spain 2	#	\$	á	;	Ñ	¿	é	`	í	ñ	ó	ú
Latin A	#	\$	á	;	Ñ	¿	é	ü	í	ñ	ó	ú

Note: In LQ mode, the Korean and legal international xcharacter sets are not available.

---

## Converting Hexadecimal Numbers to Decimals

If you prefer to use decimal instead of hexadecimal numbers, you can convert hexadecimal to decimal numbers using the table below.

Just read down in the column for the first digit of the hexadecimal value and across in the row for the second digit. The decimal value that corresponds to your hexadecimal number is at the intersection of the column beginning with the hexadecimal number's first digit and the row beginning with the hexadecimal number's second digit.

For example, to find the decimal equivalent of the hexadecimal number 5A, find where column 5 intersects row A. There you will find the hexadecimal number's decimal equivalent, 90.

	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
0	0	16	32	48	64	80	96	112	128	144	160	176	192	208	224	240
1	1	17	33	49	65	81	97	113	129	145	161	177	193	209	225	241
2	2	18	34	50	66	82	98	114	130	146	162	178	194	210	226	242
3	3	19	35	51	67	83	99	115	131	147	163	179	195	211	227	243
4	4	20	36	52	68	84	100	116	132	148	164	180	196	212	228	244
5	5	21	37	53	69	85	101	117	133	149	165	181	197	213	229	245
6	6	22	38	54	70	86	102	118	134	150	166	182	198	214	230	246
7	7	23	39	55	71	87	103	119	135	151	167	183	199	215	231	247
8	8	24	40	56	72	88	104	120	136	152	168	184	200	216	232	248
9	9	25	41	57	73	89	105	121	137	153	169	185	201	217	233	249
A	10	26	42	58	74	90	106	122	138	154	170	186	202	218	234	250
B	11	27	43	59	75	91	107	123	139	155	171	187	203	219	235	251
C	12	28	44	60	76	92	108	124	140	156	172	188	204	220	236	252
D	13	29	45	61	77	93	109	125	141	157	173	189	205	221	237	253
E	14	30	46	62	78	94	110	126	142	158	174	190	206	222	238	254
F	15	31	47	63	79	95	111	127	143	159	175	191	207	223	239	255



# Appendix B

## Modes and Commands

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## **Available Printer Modes**

Your EPI-4000 printer comes with the following resident printer modes:

- HP LaserJet series II
- Epson LQ-2500
- Epson FX-850/1050

This appendix gives you information on how to operate your printer as an HP LaserJet series II, Epson LQ-2500, or Epson FX-850/1050 printer. It also describes the printer commands used for HP or LQ/FX emulation modes.

### **Setting the Printer Mode With SelecType**

Because your printer is set at the factory to operate in LaserJet series II emulation mode, you must change the mode setting before you can operate it as an Epson LQ-2500 or FX 850/1050 printer. To set a new printer mode, see Chapter 2. There you will find complete instruction to change SelecType settings.

### **Printer Driver Information**

Many application programs let you specify the type of printer you're using by selecting a printer driver. Drivers are programs that your software uses to send commands to the printer. Application programs often provide an installation or setup procedure that presents a list of printer drivers to choose from.

The EPI-4000 is factory set to LaserJet series II emulation mode and this factory setting gives you the fullest range of features. Simply leave the printer in HP emulation mode and choose one of the printers below from your program's setup menu. They are listed in order of preference.

HP LaserJet series II™ or HP LaserJet 2000™  
 HP LaserJet Plus™  
 HP LaserJet 500™  
 HP LaserJet™

Note: If you use 11 x 17-inch (ledger or B) size paper for most of your printing jobs, choose the HP LaserJet 2000. For more about HP emulation mode, see Chapter 1.

The application program's menu may list a number of more specific choices corresponding to various HP LaserJet font cartridges. (The choices are labeled with capital letters, such as A, B, or C.)

## Fonts and Font Cartridges

There are six resident fonts in your printer. These correspond to the resident fonts for the HP LaserJet series II printer. They are:

Courier	12 point	Portrait
Courier	12 point	Landscape
Courier bold	12 point	Portrait
Courier bold	12 point	Landscape
Line printer	8.5 point	Portrait
Line printer	8.5 point	Landscape

In addition, the slots on your printer accept a wide variety of other fonts available on font cards.

---

## **HP Emulation**

Your EPI-4000 printer offers HP emulation so you can use most: commercial software designed for the HP LaserJet series II printer. Simply follow the software's instructions for printing with an HP LaserJet series II printer.

### **Unique Features**

Certain EPI-4000 printer functions give you greater versatility than you get with an HP LaserJet series II printer. These include the following:

- The ability to print on different sizes of paper without changing the paper cassette.
- An easy-to-use control panel.
- Ability to use Epson font cards for crisp, clear printing.
- Two ESC/P emulation modes for compatibility with software applications written for Epson 9-pin and 24-pin printers.

### **Printable area**

The size of the printable area for the LaserJet series II and the EN-4000 is the same. The maximum number of characters that can be printed per line is also the same. However, the absolute print position may not be exactly the same as a printout from an HP LaserJet series II printer.

Another difference is that you can use continuous paper with your EPI-4000. Although impossible with an HP LaserJet series II printer, the EPI-4000 can print on continuous paper in LaserJet series II mode. See the technical specifications in the optional push tractor's manual for more information on the printable area for this type of paper.

---

## Command Summary for HP Emulation

This section lists the printer commands supported in HP emulation. For more information on printer commands, see the Hewlett-Packard LaserJet series II Technical Reference Manual.

### EPI-4000 and HP Command Differences

All commands listed in this section closely emulate LaserJet series II commands, except for the following:

ESC &l#A can be used to select the following six paper sizes:

Letter	Ledger (B)
Legal	A4
Executive	A3

This command overrides the SelecType paper size setting. Other paper sizes cannot be specified with this command. To access all 13 sizes of paper the printer supports, use the SelecType paper size menu. See Chapter 2.

The ESC &l#H command cannot be used to specify manual paper feeding. The values for # produce the following effects:

#	LaserJet II action	EPI-4000 action
0	Eject current page	Eject current page
1	Paper feed from cassette tray	Feed from paper tray, manual feed, or optional push tractor
2	Feed from manual feed slot	Feed from paper tray, manual feed, or optional push tractor

ESC &l#P sets the page length and also sets the paper size. Paper sizes available with this command are the same as those for the ESC&l#A command.

## Job Control Commands

Function	Printer Command
Control Codes	
Backspace	BS
Line Feed	LF
Form Feed	FF
Carriage Return	CR
Shift Out	SO
Shift In	SI
Escape	ESC
Horizontal Tab	HT
Space	SP
Reset	
Printer reset	ESCE
Number of copies	ESC&I#X
# = Number of copies	
Paper input control	
Eject page	ESC&I0H
Feed from tray	ESC&I1H
Manual feed	ESC&I2H

Function	Printer Command
Page Length and Size	
Paper size	
Executive	ESC&I1A
Letter	ESC&I2A
Legal	ESC&I3A
Ledger (B)	ESC&I6A
A4	ESC&I26A
A3	ESC&I27A
Page length	ESC&I#P
# = Number of lines.	
Orientation	
Portrait	ESC&I00
Landscape	ESCXI10
Margins and Text Length	
Top margin	ESC&I#E
Text length	ESC&I#F
# = Number of lines.	
Set left margin	ESC&a#L
Set right margin	ESC&a#M
# = Column number.	
Clear side margins	ESC9
Perforation Skip Mode	
Enable	ESC&I1L
Disable	ESC&I0L
Horizontal Column Spacing	
Horizontal motion index	ESCBk#H
# = Number of 1/120-inch increments.	

---

<b>Function</b>	<b>Printer Command</b>
Vertical Line Spacing	
Vertical motion index	ESC&I#C
# = Number of 1/48-inch increments	
Lines per inch	
1 lines per inch	ESC&I1D
2 lines per inch	ESC&I2D
3 lines per inch	ESC&I3D
4 lines per inch	ESC&I4D
6 lines per inch	ESC&IGD
8 lines per inch	ESC&I8D
12 lines per inch	ESC&I12D
16 lines per inch	ESC&I16D
24 lines per inch	ESC&I24D
48 lines per inch	ESC&I48D

---



## Cursor Positioning

Function	Printer Command
Vertical and Horizontal	
Vertical	
Vertical (lines)	ESC&a#R
# = Number of rows.	
Vertical (decipoints)	ESC&a#V
# = Number of decipoints.	
Vertical (dots)	ESC*p#Y
# = Number of dots.	
Horizontal	
Horizontal (columns)	ESC&a#C
# = Number of columns.	
Horizontal (decipoints)	ESC&a#H
# = Number of decipoints.	
Horizontal (dots)	ESC*p#X
# = Number of dots.	
Half-line feed	ESC =
End-Of-Line Termination	
Line termination	
CR=CR LF=LF FF=FF	ESC&k0G
CR=CR+LF LF=LF FF=FF	ESC&k1G
CR=CR LF=CR+LF FF=CR+FF	ESC&k2G
CR=CR+LF LF=CR+LF FF=CR+FF	ESC&k3G
Push/Pop position	
Push	ESC&f0S
Pop	ESC&f1S

## Font Selection

Function	Printer Command
Symbol Set Selection	
Primary symbol sets	
Line draw	ESC(0B
ISO ASCII	ESC(0U
Roman-8	ESC(8U
Roman Extension	ESC(0E
ISO Norway 1	ESC(0D
ISO United Kingdom	ESC(1E
ISO France	ESC(0F
ISO Germany	ESC(0G
ISO Italy	ESC(0I
ISO Sweden	ESC(0S
ISO Spain	ESC(1S
Mat h-7	ESC(0A
ISO JIS ASCII	ESC(0K
Math-72	ESC(0M
ISO Latin	ESC(0N
OCR-A	ESC(0O
ISO Norway 2	ESC(1D
ISO France 2	ESC(1F
ISO Germany 2	ESC(1G
Katakana	ESC(1K
Technical	ESC(1M
OCR-B	ESC(1O
Legal	ESC(1U
ISO China	ESC(2K
ISO Spain 2	ESC(2S
ISO IRV	ESC(2U
ISO Sweden 2	ESC(3S
ISO Portugal	ESC(4S
ISO Portugal 2	ESC(5S
ISO Spain 3	ESC(6S
OEM-1	ESC(7U

Function	Printer Command
Symbol Set Selection (continued)	
Primary symbol sets (continued)	
Greek-8	ESC(8G
Mat h-8	ESC(8M
IBM-US	ESC(10U
IBM-D/N	ESC(11U
Pi font	ESC(15U
Secondary symbol sets	
Line draw	ESC)0B
ISO ASCII	ESC)0U
Roman-8	ESC)8U
Roman Extension	ESC)0E
ISO Norway 1	ESC)0D
ISO United Kingdom	ESC)1E
ISO France	ESC)0F
ISO Germany	ESC)0G
ISO Italy	ESC)0I
ISO Sweden	ESC)0S
ISO Spain	ESC)1S
Math-7	ESC)0A
ISO JIS ASCII	ESC)0K
Math-72	ESC)0M
ISO Latin	ESC)0N
OCR-A	ESC)0O
ISO Norway 2	ESC)1D
ISO France 2	ESC)1F
ISO Germany 2	ESC)1G
Katakana	ESC)1K
Technical	ESC)1M
OCR-B	ESC)1O
Legal	ESC)1U
ISO China	ESC)2K
ISO Spain 2	ESC)2S
ISO IRV	ESC)2U

Function	Printer Command
Symbol Set Selection (continued)	
Secondary symbol sets (continued)	
ISO Sweden 2	ESC)3S
ISO Portugal	ESC)4S
ISO Portugal 2	ESC)5S
ISO Spain 3	ESC)6S
OEM-I	ESC)7U
Greek-8	ESC)8G
Math-8	ESC)8M
IBM-US	ESC)10U
IBM-D/N	ESC)11U
Pi Font	ESC)15U
Spacing	
Primary spacing	
Proportional	ESC(s1P
Fixed	ESC(s0P
Secondary spacing	
Proportional	ESC)s1P
Fixed	ESC)s0P
Pitch	
Primary pitch	
10 CPI	ESC(s10H
12 CPI	ESC(s12H
16.66 CP	ESC(s16.6H
Secondary pitch	
10 CPI	ESC)s10H
12 CPI	ESC)s12H
16.66 CPI	ESC)s16.6H

Function	Printer Command
Point Size	
Primary point size	
7 Pt.	ESC(s7V
8 Pt.	ESC(s8V
8.5 Pt.	ESC(s8.5V
10 Pt.	ESC(s10V
12 Pt.	ESC(s12V
14.4 Pt.	ESC(s14.4V
Secondary point size	
7 Pt.	ESC)s7V
8 Pt.	ESC)s8V
8.5 Pt.	ESC)s8.5V
10 Pt.	ESC)s10V
12 Pt.	ESC)s12V
14.4 Pt.	ESC)s14.4V
Style	
Primary style	
Upright	ESC(s0S
Italic	ESC(s1S
Secondary style	
Upright	ESC)s0S
Italic	ESC)s1S

Function	Printer Command
Stroke Weight	
Primary stroke weight	
Light (-3)	ESC(s-3B
Medium (0)	ESC(s0B
Bold (3)	ESC(s3B
Secondary stroke weight	
Light (-3)	ESC)s-3B
Medium (0)	ESC)s0B
Bold (3)	ESC)s3B
Typeface	
Primary typeface	
Line printer	ESC(s0T
Pica	ESC(s1T
Elite	ESC(s2T
Courier	ESC(s3T
Helvetica	ESC(s4T
Times Roman	ESC(s5T
Letter Gothic	ESC(s6T
Script	ESC(s7T
Prestige Elite	ESC(s8T
Caslon	ESC(s9T
Orator	ESC(s10T
Presentations	ESC(s11T
Optima	ESC(s17T
ITC Garamond	ESC(s18T
Cooper Black	ESC(s19T
Coronet Bold	ESC(s20T
Broadway	ESC(s21T
Bauer Bodoni Black Condensed	ESC(s22T
Century Schoolbook	ESC(s23T
University Roman	ESC(s24T

Function	Printer Command
Typeface (continued)	
Secondary typeface	
Line printer	ESC)s0T
Pica	ESC)s1T
Elite	ESC)s2T
Courier	ESC)s3T
Helvetica	ESC)s4T
Times Roman	ESC)s5T
Letter Gothic	ESC)s6T
Script	ESC)s7T
Prestige Elite	ESC)s8T
Caslon	ESC)s9T
Orator	ESC)s10T
Presentations	ESC)s11T
Optima	ESC)s17T
ITC Garamond	ESC)s18T
Cooper Black	ESC)s19T
Coronet Bold	ESC)s20T
Broadway	ESC)s21T
Bauer Bodoni Black Condensed	ESC)s22T
Century Schoolbook	ESC)s23T
University Roman	ESC)s24T
Font Pitch	
Font pitch (alternate method)	
Standard pitch	ESCBk0S
Compressed pitch	ESC&k2S
Underline	
Enable fixed underlining	ESC&d0D
Enable floating underlining	ESC&d3D
Disable underlining	ESC&d@

## Font Management

Function	Printer Command
Font Management	
Specify font ID # = Font ID number.	ESC*c#D
Font and character control	
Delete all fonts	ESC*c0F
Delete all temporary fonts	ESC*c1F
Delete last specified font ID	ESC*c2F
Clear single character	ESC*c3F
Make temporary font	ESC*c4F
Make permanent font	ESC*c5F
Register copied font	ESC*c6F
Font Selection by ID Number	
Primary	ESC(#X
Secondary	ESC)#X
# = Font ID number.	
Default font selection	ESC(3@ or ESC)3@

## Soft Font Creation

Function	Printer Command
Soft Font Creation	
Create font (font header) # = Number of bytes.	ESC)s#W [data]
Download character # = Number of bytes.	ESC(s#W [data]
Specify character code # = ASCII code number (decimal).	ESC*c#E



## Graphics

Function	Printer Command
Raster Graphics	
Resolution	
75 dots per inch	ESC*t75R
100 dots per inch	ESC*t100R
150 dots per inch	ESC*t150R
300 dots per inch	ESC*t300R
Start graphics	
Portrait: left-most position	ESC*r0A
Landscape: top-most position	ESC*r0A
Portrait: current X position	ESC*r1A
Landscape: current Y position	ESC*r1A
Transfer	ESC*b#W [data]
# = Number of rows.	
End graphics	ESC*rB
Rectangle Dimensions	
Horizontal size (width)	ESC*c#A
# = Number of dots.	
Horizontal size (width)	ESC*c#H
# = Number of decipoints.	
Vertical size (height)	ESC*c#B
# = Number of dots.	
Vertical size (height)	ESC*c#V
# = Number of decipoints.	

## Graphics (continued)

Function	Printer Command
Rectangular Area Fill	
Fill rectangle area	
Solid Rule	ESC*c0P
Gray scale fill	ESC*c2P
Patterned fill	ESC*c3P
Gray scale pattern ID	
2% gray	ESC*c2G
10% gray	ESC*c10G
15% gray	ESC*c15G
30% gray	ESC*c30G
45% gray	ESC*c45G
70% gray	ESC*c70G
90% gray	ESC*c90G
100% gray	ESC*c100G
Pattern ID	
1 Horizontal lines	ESC*c1G
2 Vertical lines	ESC*c2G
3 Diagonal lines	ESC*c3G
4 Diagonal lines	ESC*c4G
5 Square Grid	ESC*c5G
6 Diagonal grid	ESC*c6G

**Macros**

Function	Printer Command
Macro ID and Control	
Macro ID	ESC&f#Y
# = Macro ID number.	
Macro control	
Start macro	ESC&f0X
Stop macro	ESC&f1X
Execute macro	ESC&f2X
Call macro	ESC&f3X
Enable overlay	ESC&f4X
Disable overlay	ESC&f5X
Delete macros	ESC&f6X
Delete all temporary macros	ESC&f7X
Delete macro ID	ESC&f8X
Make temporary	ESC&f9X
Make permanent	ESC&f10X

**Programming Aids**

Function	Printer Command
Miscellaneous Features	
Enable display functions mode	ESC Y
Disable display functions mode	ESC Z
Transparent print data	ESC&p#X [data]
# = Number of bytes.	
End of Line Wrap	
Enable line wrap	ESC&s0C
Disable line wrap	ESC&s1C

---

## Command Summary for LQ/FX Emulation

This summary contains all the commands used by the printer in LQ or FX emulation mode. Command parameters are indicated by lowercase italicized letters, usually *n*. The examples below show how the parameters are indicated.

**ESC @** is a command with no parameters.

**ESC U I/O** is a command that uses 1 to turn the feature on and 0 to turn it off.

**ESC \$ *n1 n2*** is a command with two parameters.

**ESC D *nn*** is a command with a variable number of parameters.

### EPI-4000 and LQ/FX Command Differences

Some LQ and FX printer codes are not available with the EPI-4000, either because the functions are not required (such as draft printing), or are not possible because of the different technologies used in the printers. The following commands are either not available or are ignored in LQ and FX emulation modes:

ESC <	unidirectional mode (one line)
ESC 8	disable paper end detector
ESC 9	enable paper end detector
ESC U	select print direction
ESC s	set/cancel half-speed printing
ESC r	select color printing
ESC i	incremental view
BELL	buzzer control

The following commands are available in FX mode but not in LQ mode:

ESC 1	7/72-inch line feed
ESC ^	select 9-pin graphics mode
ESC I	select character code table

The printer commands listed below function in a slightly different way when used in LQ or FX emulation modes. Also, many of the commands which control the print position use approximations because of the different print densities of LQ/FX series printers and the EPI-4000.

ESC G, ESC E

These commands produce identical bolding effects on the EPI-4000 printer. On an actual LQ series printer, these two commands create slightly different effects and can be combined to produce darker characters.

SI, ESC SI

These commands print 10 cpi characters in a 16.66 cpi font, and 12 cpi characters in a 20 cpi font. On an actual LQ/FX series printer, these command condense the font.

ESC x

This command is normally used to select between draft and LQ (NLQ) quality printing on an LQ or FX series printer. However, this command has no effect on EPI-4000 print quality, since all characters print at 300 dpi Letter Quality.

## **ESC w**

This command produces double-height characters, but differs operationally in the following ways:

**LQ mode**-If you send the ESC w command when the print position is set at the first line of **the** logical page, LQ series printers will only print the bottom half of each character. The EPI-4000 prints the entire character when you are printing on single sheets. If you are printing on continuous paper, the EPI-4000 does not print.

**FX mode**-When you combine this command with ESC W to produce double-width, double-height characters, FX series printers do not increase the stroke weight for vertical lines. In FX emulation mode, **the** EPI-4000 does increase **the** vertical line weight.

## **ESC S0, ESC SI, ESC w, ESC -**

When you print on continuous paper, the characters described below cannot be printed:

- Superscript characters and double-height characters on the first line of the logical page
- Subscript characters and underlined characters on the last line of the logical page.

## **ESC C, ESC C0**

When you send the ESC C or ESC C 0 command to change the page length on LQ or FX printers, you can print more than one page on the same sheet of continuous paper. Because the EPI-4000 processes data page-by-page, each page must be printed on a separate sheet of paper, so exact LQ or FX emulation cannot be provided. Problems will occur when the page length set with the ESC C or ESC C0 command differs from the actual page length.

## **DEL**

The EPI-4000 handles the DEL command as a BS command. Print portion return is **the** same as for an LQ or FX printer, although the EN-4000 does not clear previous characters.

## **CAN**

Although **an** LQ or FX printer clears the data in its print buffer in response to this command, the EPI-4000 printer prints the data.

## **ESC EM**

The EPI-4000 supports only R for *n*.

## **ESC &, ESC K, ESC L, ESC Y, ESC Z, ESC \*, and ESC ^**

The EN-4000 uses an image processing technique that emulates, as closely as possible, the image densities available on LQ and FX printers. Because of this process, **the** graphics commands listed above do not produce exactly the same output on the EN-4000 as they would on an Epson LQ or FX printer.

## Printer Operation

ASCII	Dec.	Hex.	Description
ESC @	64	40	Initialize Printer
DC1	17	11	Select Printer
DC3	19	13	Deselect Printer
DEL	127	7F	Delete Character
ESC	60	3C	Select Unidirectional Mode (one line)
ESC U 0/1	85	55	Turn Unidirectional Mode On/Off
ESC EM	25	19	Control Cut Sheet Feeder Mode 4: Turns mode on R: Ejects a sheet 0: Turns mode off
ESC =	61	3D	Set MSB to 0
ESC >	62	3E	Set MSB to 1
ESC #	35	23	Cancel MSB Control
BEL	7	07	Beeper

## Data Control

ASCII	Dec.	Hex.	Description
CR	13	0D	Carriage Return
CAN	24	18	Cancel Line



**Vertical Motion**

<b>ASCII</b>	<b>Dec.</b>	<b>Hex.</b>	<b>Description</b>
FF	12	0C	Form Feed
ESC Cn	67	43	Set Page Length in Lines <i>n</i> = no. of lines (1-127:)
ESC C0n	67	43	Set Page Length in Inches <i>n</i> = no. of in (1-22)
ESC N n	78	4E	Set Skip Over Perforation <i>n</i> = no. of lines (1-1 27)
ESC O	79	4F	Cancel Skip Over Perforation
LF	10	0A	Line Feed
ESC 0	48	30	Select 1/8-inch Line Spacing
ESC 2	50	32	Select 1/6-inch Line Spacing
ESC + n	43	28	Set <i>n</i> /360-inch Line Spacing
ESC3 n	51	33	Set <i>n</i> /180-inch Line Spacing
ESC An	65	41	Set <i>n</i> /60-inch Line Spacing
ESC Jn	74	4A	Perform <i>n</i> /180-inch Line Feed
ESC jn			Perform <i>n</i> /180-inch reverse form feed
VT	11	0B	Tab Vertically
ESC B <i>nn</i>	66	42	Set Vertical Tabs Up to 16 tabs; last <i>n</i> should be 0 (1-225)
ESC b <i>nn</i>	98	62	Set Vertical Tabs in Channels Same as ESC B except the first <i>n</i> selects a channel for tabs.
ESC In	47	2F	Select Vertical Tab Channel <i>n</i> = the vertical tab channel (0-7)

## Horizontal Motion

ASCII	Dec.	Hex.	Description
ESC I <i>n</i>	108	6C	Set Left Margin <i>n</i> = left margin column
ESC Q <i>n</i>	81	51	Set Right Margin <i>n</i> = right margin column
BS	8	08	Backspace
ESC \$ <i>n1 n2</i>	36	24	Set Absolute Print Position Specifies print position from the left margin in 1/60-in units Total number of units = $n1 + (n2 \times 256)$
ESC \ <i>n1    n2</i>	92	5C	Set Relative Print Position Moves current print position in units of 1/120 in draft and 1/180 in LQ Total number of units = $n1 + (n2 \times 256)$
HT	9	09	Tab Horizontally
ESC D <i>nn</i>	68	44	Set Horizontal Tabs Up to 32 tabs (1-255) entered in ascending order Terminated by 0

**Overall Printing Style**

<b>ASCII</b>	<b>Dec.</b>	<b>Hex.</b>	<b>Description</b>
ESC x n	120	78	Select Letter Quality or Draft 0: Draft 1: Letter Quality
ESC k n	107	6B	Select Letter Quality Font 0: Roman      4: Script 1: Sans Serif    5: OCR-B 2: Courier      6: OCR-A 3: Prestige (Typestyles 0, 1, and 4-6 are available with optional font card only)
ESC ! n	33	21	Master Select To find the value of <i>n</i> add together the numbers of the typestyles you want to combine from the list below. 10 cpi: 0 decimal, 00 hex; 12 cpi: 1, 01; proportional: 2, 02; condensed: 4, 04; emphasized: 8, 08; double-strike: 16, 10; double-wide: 32, 20; italics: 64, 40; underline: 128, 80

## Print Size and Character Width

ASCII	Dec.	Hex.	Description
ESC P	80	50	Select 10 CPI
ESC M	77	4D	Select 12 CPI
ESC g	103	67	Select 15 CPI
ESC p	112	70	Turn Proportional Mode On/Off
SI	15	0F	Select Condensed Mode
ESC SI	15	0F	Select Condensed Mode
DC2	18	12	Cancel Condensed Mode
s o	14	0E	Select Double-wide Mode (one line)
ESC SO	14	0E	Select Double-wide Mode (one line)
ESC W	a7	57	Turn Double-wide Mode On/Off
DC4	20	14	Cancel Double-wide Mode (one line)
ESC w	119	77	Turn Double-high Mode On/Off

## Print Enhancement

ASCII	Dec.	Hex.	Description
ESC E	69	45	Select Bold Print Mode
ESC F	70	46	Cancel Bold Print Mode
ESC G	71	47	Select Overprint Mode
ESC H	72	48	Cancel Overprint Mode
ESC S 0	a3	53	Select Superscript Mode
ESC S 1	a3	53	Select Subscript Mode
ESC T	a4	54	Cancel Superscript/Subscript Mode
ESC -	45	2D	Turn Underline Mode On/Off

## Word Processing

ASCII	Dec.	Hex.	Description
ESC a	97	61	Select Justification
ESC SP	32	20	Set Intercharacter Space

## Character Tables

ASCII	Dec.	Hex.	Description
ESC t n	116	74	Select Character Table Selects character table for codes 128-255 0: italic 1: Extended Graphics 2: Download characters
ESC 4	52	34	Select Italic Mode
ESC 5	53	35	Cancel Italic Mode
ESC R n	a2	52	Select an International Character Set 0: USA, 1: France, 2: Germany, 3:UK, 4: Denmark, 5: Sweden, 6: Italy, 7: Spain, 8: Japan, 9: Norway, 10: Denmark II, 11: Spain II, 12: Latin America II

## User-defined Characters

ASCII	Dec.	Hex.	Description
ESC &	38	26	Define User-defined Characters
ESC:000	58	3A	Copy ROM to RAM
ESC % <i>n</i>	37	25	Select User-defined Set 0: Normal set 1: User-defined set
ESC 6	54	36	Enable Printable Characters With Extended Graphics enables the printing of codes 128-159 as characters
ESC 7	55	37	Enable Upper Control Codes Cancels ESC 6

## Graphics

ASCII	Dec.	Hex.	Description
ESC K <i>n1 n2</i>	75	4B	Select Single-density Graphics Mode'
ESC L <i>n1 n2</i>	76	4C	Select Double-density Graphics Mode*
ESC Y <i>n1 n2</i>	89	59	Select High-speed Double-density'
ESC Z <i>n1 n2</i>	90	5A	Select Quadruple-density Graphics'
ESC ? <i>s m</i>	63	3F	Reassign Graphics Mode Reassigns command <i>s</i> to mode <i>m</i> <i>s</i> = K, L, Y, or Z <i>m</i> = mode (0-6)
ESC ^ <i>m n1 n2 94</i>		5E	Select 9-pin Graphics Mode <i>m</i> = print density 0: single 1: double Total columns = $n1 + (n2 \times 256)$

**\*Note:** ESC K, L, Y, and Z each select an 8-pin mode. Total columns =  $n1 + (n2 \times 256)$

**Graphics (con't)**

ASCII	Dec.	Hex.	Description		
ESC * m n1 n2 42 2 A			Select Graphics Mode Selects graphics mode <i>m</i> Total columns = $n1 + (n2 \times 256)$		
					<i>Horiz.</i>
<i>Option</i>			<i>pins</i>	<i>m</i>	<i>dots/inch</i>
Single-density			8	0	60
Double-density			8	1	120
High-speed double-density'			8	2	120
Quadruple-density'			8	3	240
CRT I			8	4	80
CRT II			8	6	90
Single-density			24	32	60
Double-density			24	33	120
CRT III			24	38	90
Triple-density			24	39	180
Hex-density*			24	40	360
* Adjacent dots cannot be printed in this mode.					

# Glossary

Note that these definitions apply specifically to printers.

## **application program**

A software program that helps you carry out a particular task, such as word processing or graphics.

## **ASCII**

American Standard Code for Information Interchange. A standardized coding system for assigning numerical codes to letters and symbols.

## **auto line feed**

When this feature is enabled using the SelecType setting, each carriage return code (CR) is automatically accompanied by a line feed (LF) code.

## **baud rate**

A measure of the speed of data transmission. Usually equivalent to bits per second.

## **bidirectional printing**

Printing in which the print head goes from left to right only on every other line. On other lines, it goes from right to left. This increases the speed of printing because the print head prints in both directions.

## **binary**

See number systems.

## **bit**

A binary digit (0 or 1), which is the smallest unit of information used by a printer or computer. See *also* number systems.

## **bit image graphics**

A graphic design formed by patterns of dots. Also called dot graphics.



**bold**

A print enhancement that produces darker than normal characters and is typically used to add emphasis to a document. Bold is also offered as a font attribute. See weight.

**buffer**

See memory.

**byte**

A unit of information consisting of eight bits. A byte usually corresponds to one character or code.

**character set**

A collection of letters, numbers, and symbols that provides you with the characters used in a particular language.

**character spacing**

Refers to two methods for horizontal character **placement--fixed-pitch** and proportional spacing.

**characters per inch (cpi)**

A measure of the size of text characters.

**continuous paper**

Paper which has sprocket-feed holes on both long edges, is perforated between pages, and is supplied in a folded stack. Also called fanfold paper. The EPI-4000 printer can handle continuous paper by using the optional push tractor unit.

**control code**

Special codes used to control printer functions such as performing a carriage return or line feed.

**cpi**

See characters per inch.

**data dump mode**

See hex dump mode.

decimal

See number systems.

**default**

A value or setting that takes effect when the equipment is turned on, reset, or initialized.

**dot graphics**

See bit image graphics.

**download**

A way of transferring information from a computer to the printer.

**download font**

A font that is loaded into the printer's memory from a remote source.

**dpi**

Dots per inch. This is a measure of print resolution; the EPI-4000 prints at 300 dpi.

**draft**

One of two print qualities available on your printer. In the draft mode, printing of horizontal dots is thinned out uniformly from the Letter Quality printing density, so that the printing speed is double that of the Letter Quality mode. Horizontal dots are printed at 150 dpi density. See *also* Letter Quality.

**driver**

The part of an application program that converts commands from the program into commands used by the printer. Also known as a printer driver.

**Epson Extended Graphics character table**

The Epson Extended Graphics character table contains international accented characters, Greek characters, and character graphics for printing lines, corners, and shaded areas.

**ESC (escape) code**

A special control code used to begin most printer commands.

**ESC/P**

Abbreviation for Epson Standard Code for Printers. This system of printer commands lets you perform software control of your printer from your computer. It is standard for all Epson printers and supported by most application software for personal computers.

**fixed pitch**

Refers to the character spacing of a font in which the width is the same for all characters, as distinguished from proportional spacing. For fixed-pitch fonts, narrow characters such as lowercase i take up as much space as wider characters such as uppercase **W**.

**font**

In the HP LaserJet series II emulation mode, font means the complete character set of a given design and size. A font is specified by the following parameters: orientation, symbol set, spacing, pitch, point size, typeface, style, and weight. In the ESC/P emulation modes, font means a style of type designated by a family name.

**font card**

An optional IC card that contains additional fonts.

**form feed**

A control code and a panel button that advances the paper to the top of the next page.

**graphics driver**

A part of an application program that allows a computer to produce graphic images on a particular type of printer.

**hexadecimal (hex)**

See number systems.

**hex dump mode**

A printing mode that can be used to print out the exact codes reaching the printer. This mode can be used by experienced users as a troubleshooting tool.

**IC cards**

Optional cards that can be plugged into either of the two slots on the printer.

**initialization**

Returns the printer to its defaults (fixed set of conditions).

**interface**

The connection between the printer and the computer. A parallel interface transmits data one character or code at a time, and a serial interface transmits data one bit at a time.

**international characters**

Accented letters, symbols and other characters that are commonly used in a particular country.

**italic**

A typestyle in which the characters slant. *This sentence is italicized.*

**landscape**

Printing that is oriented sideways on the page. This orientation gives you a page that is wider than it is high and is useful for printing spreadsheets.

**Letter Quality**

One of two print qualities available on your printer. Letter Quality increases the print quality and reduces the print speed. See also draft.

**line space**

The distance between lines of text.

**LED**

Light-Emitting Diode. A semiconductor device that emits light. Used for indicator lights on the panel of your printer.

**LED display**

Display which is constructed from an LED array. They are used as two-digit counters on the panel of your printer.

memory

The part of the printer's electronic system that is used to store information. Some information is fixed and is used to control how the printer operates. Information that is sent to the printer from the computer (such as downloaded fonts and graphics) is stored temporarily until it is printed out. See also RAM and ROM.

menu

In the SelecType mode, you can change sixteen kinds of settings in your printer, such as the paper size or font source. These sixteen settings are called menus. *See also option.*

number systems

Three number systems are commonly used with printers:

`decimal` is base 10 and uses the digits 0, 1, 2, 3, 4, 5, 6, 7, 8, and 9. This is the most familiar system.

`hexadecimal` (`hex`) is base 16 and uses the digits 0, 1, 2, 3, 4, 5, 6, 7, 8, 9, A, B, C, D, E, and F. This is frequently used by programmers. Any decimal number between 0 and 255 can be expressed by a two-digit hex number.

`binary` is base 2 and uses only the digits 0 and 1. All information in computer systems is handled in binary form to represent electrical signals that are on or off. A binary digit is often called a bit; any decimal number between 0 and 255 can be expressed by an eight-bit binary number.

off line

When the printer is off line, it cannot communicate with the computer.

on line

When the printer is on line, it is able to communicate with the computer.

option

In the SelectType mode, you can change the sixteen menus for your printer, and each of those menus has parameters. For example, in the interface menu, you can select the parallel or serial option. These parameters are called options. See &o menu.

orientation

Refers to the direction in which characters can be positioned on a page as they are printed out. This direction is either portrait (normal) or landscape (sideways).

parallel interface

See interface.

parity

A method of checking the reliability of data transmission between the computer and printer.

point size

The height of a particular typeface as measured from the top of the tallest character to the bottom of the lowest. A point is a typographic unit of measure equivalent to 1/72 inch.

portrait

Printing that is oriented upright on the page (as opposed to landscape, in which printing is oriented sideways on the page). This is the standard orientation for printing letters or documents.

printer driver

See driver.

printer mode

A set of operating commands that determines how data sent from the computer is interpreted and acted upon. Printer modes can emulate existing printers. The EPI-4000 printer offers three printer modes: HP LaserJet series II, LQ, and FX.

print quality

Your printer has two types of print quality: draft and Letter Quality (LQ). Draft is for high-speed, draft quality jobs; LQ is used to produce more polished documents.

proportional printing

Printing in which the character width varies from character to character. For example, a capital W receives much more space than a lowercase i. The result looks more like a typeset book than a typewritten draft.

push tractor unit

An optional device that moves continuous paper through the printer.

R A M

Random Access Memory. The portion of the printer's memory used as an input buffer and for storing user-defined characters, downloaded fonts, and graphics images. Information stored in RAM is volatile and is lost when the printer power is interrupted.

reset

To return a printer to its defaults, either by a command, interface signal, RESET button, or by turning the printer off and on.

R O M

Read Only Memory. The portion of the printer's memory that is permanent. Information stored in ROM is used to control how the printer operates. Resident fonts are also stored in ROM.

SelecType

A feature of the printer that allows you to set printer values and control most of the printer's functions from the front panel.

serial interface

See interface.

status sheet

A report that lists the settings and other printer information. You can print this report using the SelecType feature.

style

Refers to whether or not a character is slanted. The two styles are upright and italic.

symbol set

A collection of symbols (letters, numbers, and special characters) used by a font. Symbols are assigned to specific codes in a character table.

test print

A method of checking the operation of the printer. When a test print is performed with the SelecType feature, the printer prints out the characters that are stored in its ROM.

typeface

A set of characters, all of a single design, in which the characters share common features such as body shape. The typeface is given a name such as Courier.

unidirectional printing

Printing in one direction only. Allows more precise vertical alignment than bidirectional printing. Often used for printing graphics.

weight

The boldness or thickness of a character. Weight is selected as a font parameter.



---

# Index

Printer commands are not indexed here. To locate a specific command, see Appendix B. For status or error messages on the display, see Chapter 6.

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# EPSON®

# EPI-4000

Quick Reference

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# HP LaserJet II Emulation Mode Menus and Options

		OPTIONS														
MENU		0	1	2	3	4	5	6	7	8	9	A	b	C	d	E
Paper Size	0	Letter	Legal	Exec.	B Ledger	Letter*	A4	A3	A4*	#10*	#6*	DL*	11"	12"	8.5"	A4
							Landscape			Continuous						
Orientation	1	Portrait	Land.													
Font Source	2	Internal	Slot A	Slot B	DL											
Font Number	3	Font Number (0-F)														
Symbol Set	4	Roman-8	IBM-US	IBM-DN	ISO 4	ISO 21	ISO 69	ISO 15	ISO 60	ISO 11	ISO 17	ISO 6	ISO 16	ISO 14	ISO 100	Legal
Auto Continue	5	Off	On													
Auto Margins	6	Off	On													
Lines Per Page	7	Lines (0-99)														
Self Print	8	Status Sheet	Self Test													
Printer Mode	9	HP	LQ	FX	IC card											
Auto Line Feed	A	Off	On													
Interface	b	Parallel	Serial													
Baud Rate	C	19200	9600	4800	2400	1200	600	300								
Word Length	d	8-bit	7-bit													
Parity	E	None	Odd	Even												
X-ON/X-OFF	F	Disable	Enable													

Screened column indicates menu (left) digit

\* - landscape

# LQ and FX Emulation Mode Menus and Options

		OPTIONS														
MENU		0	1	2	3	4	5	6	7	8	9	A	b	C	d	E
Paper Size	0	Letter	Legal	Exec.	B Ledger	Letter*	A4	A3	A4*	#10*	#6*	DL*	11"	12"	8.5"	A4
Orientation	1	Portrait	Land.							Envelope			Continuous			
Condensed	2	Off	On													
TypeFace	3	Courier	Prestige	OCR-B	OCR-A											
Ext. Graphics	4	Graphic	Italic													
Country	5	USA	FRA	GER	UK	DEN	SWE	ITA	SPAI	JPN	NOR	DEN2	SPA2	LATIN		
Auto Margins	6	Off	On													
Lines Per Page	7	Lines (1-99)														
Self Print	8	Status Sheet	Self Test													
Printer Mode	9	HP	LQ	FX	IC card											
Auto Line Feed	A	Off	On													
Interface	b	Parallel	Serial													
Baud Rate	C	19200	9600	4800	2400	1200	600	300								
Word Length	d	8-bit	7-bit													
Parity	E	None	Odd	Even												
X-ON/X-OFF	F	Disable	Enable													

Screened column indicates menu (left) digit

\* - landscape

# Changing SelectType Settings

ON LINE



1. **Press ON LINE to set the printer off line.**

*SelectType*



2. **Press SelectType to enter SelectType mode.**

MENU ▼



3. **Press MENU to choose the menu.**



4. **Press ◀ or ▶ to choose the option.**



SET



5. **Press SET to save the new setting.**

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Printed in Japan 90.04-.6